

### **EVALUATION OF WARM-SEASON ANNUAL GRASSES FOR SOUTHERN FORAGE-FINSHED BEEF SYSTEMS** R.W. McKee<sup>1</sup>, D.D. Harmon<sup>2</sup>, D.W. Hancock<sup>2</sup>, L. Stewart<sup>1</sup>, and A.M. Stelzleni<sup>1</sup> <sup>1</sup>Department of Animal and Dairy Sciences, <sup>2</sup>Department of Crop University of Georgia, Athens, GA

### Introduction

- •Growing producer interest in and consumer demand for forage-finished and forage-based beef
- •Producers in SE U.S. in looking for alternative markets
- •Ability to grow forages near year-round in SE
- •Year-round demand for forage-finished beef
- •Summer heat and drought pose a major issue for forage-finished beef producers
- •Warm-season annuals typically greater in forage quality than warm-season perennials common to the SE U.S.
- •Little data available for producers looking for alternative warm-season forages for beef finishing systems in the SE U.S.

### **Objectives**

- •Evaluate warm-season annuals for forage production and quality
- •Determine suitability for forage-finished beef systems in the SE U.S.
- •Compare animal performance, carcass quality and yield, meat quality, palatability, shelf-life, and composition

Methods		Results	
<ul> <li>•16 0.81-ha paddocks planted in late spring <ul> <li>4 replicates of each forage treatment (Table 1)</li> </ul> </li> <li>•32 steers (2 per paddock) forage-finished each of 3 years <ul> <li>•Shrunk weights taken at initiation, termination, and at the mid-point of each year</li> <li>•Steers were slaughtered in September</li> <li>•Carcass data collected 24-h post mortem</li> <li>•Strip loins removed and aged for 21 d <ul> <li>Fabricated into 2.54-cm steaks for analyses</li> </ul> </li> <li>• Data analyzed with PROC GLIMMIX of SAS v.9.4</li> </ul> </li> <li>Table 1. Forage Treatments <ul> <li>'Tifleaf 3' pearl millet</li> </ul></li></ul>		<ul> <li>Average daily gain (ADG)</li> <li>Average daily gain (ADG)</li> <li>Lean and skel maturity</li> <li>(BWG) (Figure 1)</li> <li>Marbling score</li> <li>Dressing percent</li> <li>Subjective lean and fat color</li> <li>Fat L*, a*, and b*</li> <li>Lean L*</li> <li>Off-flavor inter</li> <li>Treatment effects (P &gt; 0.05) were observed for</li> <li>Lean a*and b*</li> <li>Ribeye area</li> <li>Click here for tabulated results</li> </ul>	
'Tifleaf 3' pearl millet and 'Red River' crabgrass	PMCG		<u>ibulateu results</u>
'Sugar Grazer II' sorghum sudangrass	SS	Conc	lusions
<image/>		<ul> <li>While some treatment effects were observed small in magnitude</li> <li>Differences observed across years are largel attributable to variable weather conditions and 3)</li> <li>Can have a significant impact on forage p and animal performance</li> <li>Results show BMR, PM, PMCG, and SS are value of the block.</li> </ul>	



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season forage options for forage-finished beef systems in the southern United States



















## Table 2. Average Carcass Yield Indices by Treatment

Variable BMR Hot Carcass Weight (kg) 269.87 2 Kidney Delvie Heart Fet 1.542 1
Hot Carcass Weight (kg) 269.87 2
I  = 0
Kidney-Pelvic-Heart Fat 1.542
Dressing Percent 57.3
Ribeye Area (cm <sup>2</sup> ) 70.08 <sup>ab</sup> 7
Fat Thickness (cm)0.5190
Yield Grade2.1

<sup>a,b</sup>Values with different superscripts differ across rows (P < 0.05)

<u>Click here for more results of meats proximate,</u> WBSF, sensory, and carcass quality analyses

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![](_page_2_Picture_0.jpeg)

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Table 3. Average Meats Proximate Analysis by Treatment				
Forage Treatment				
BMR	PM	PMCG	SS	
22.67	22.47	22.58	22.37	
2.59	2.57	3.06	3.03	
73.61	73.84	73.26	73.51	
<b>1.13</b> <sup>a</sup>	1.11 <sup>ab</sup>	1.10 <sup>ab</sup>	1.09 <sup>b</sup>	
	Proximate         BMR         22.67         2.59         73.61         1.13 <sup>a</sup>	Proximate Analysis &           Forage T           BMR         PM           22.67         22.47           2.59         2.57           73.61         73.84           1.13 <sup>a</sup> 1.11 <sup>ab</sup>	Proximate Analysis by Treatment           Forage Treatment           BMR         PM         PMCG           22.67         22.47         22.58           2.59         2.57         3.06           73.61         73.84         73.26           1.13 <sup>a</sup> 1.11 <sup>ab</sup> 1.10 <sup>ab</sup>	

<sup>a,b</sup>Values with different superscripts differ across rows (P < 0.05)

# Table 4. Average Sensory Scores and WBSF Analysis by Treatment

	Forage Treatment			
Variable	BMR	PM	PMCG	SS
Initial Tenderness	4.7	4.98	4.91	4.91
Sustained Tenderness	4.86	5.15	5.04	5.04
Beef Intensity	4.3	4.43	4.26	4.34
Juiciness	<b>3.85</b> <sup>a</sup>	4.57 <sup>b</sup>	4.38 <sup>bc</sup>	4.24 <sup>c</sup>
Off-Flavor Intensity	1.33	1.37	1.37	1.38
Peak Force (WBSF) (kgF)	3.49	3.62	3.27	3.49
<sup>a,b,c</sup> Values with different superscripts differ across rows (P < 0.05)				

# Table 5. Average Carcass Quality Indices by Treatment

BMR .85.83 .50.42	PM 187.08	<b>PMCG</b> 181.25
.85.83	187.08	181.25
.50.42		
	151.67	149.17
.51.31	152.44	148.69
4.54	4.67	4.29
4.75	4.63	4.46
80.3	79.54	80.18
8.84	8.98	8.32
24.03	24.74	23.17
36.82	36.6	37.29
9.72 <sup>ab</sup>	29.24 <sup>b</sup>	29.72 <sup>ab</sup>
1.65 <sup>ab</sup>	21.21 <sup>b</sup>	21.65 <sup>ab</sup>
2.04	1.92	1.83
1.38	1.58	1.42
	4.54 4.75 80.3 8.84 24.03 36.82 9.72 <sup>ab</sup> 1.65 <sup>ab</sup> 2.04 1.38	4.544.674.754.6380.379.548.848.9824.0324.7436.8236.69.72ab29.24b1.65ab21.21b2.041.921.381.58

<sup>a,b</sup>Values with different superscripts differ across rows (P < 0.05)

![](_page_2_Picture_13.jpeg)

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![](_page_3_Picture_1.jpeg)

<b>1.20</b> —
<b>1.00</b> —
<del>ک</del> 0.80 –
මි ජී 0.60 —
Q 0.40
0.20
0.00
ADG (kg/d)
RAAG (KG)
SE

![](_page_3_Picture_4.jpeg)

BMR	PM	PMCG
0.99	0.85	0.97
0.06	0.07	0.09
<b>59.63</b>	50.80	55.64
3.32	3.59	3.59

SS 0.86 0.05 **51.52** 2.71

![](_page_3_Picture_9.jpeg)