EFFECT OF WINTER PASTURE GRAZING PERFORMANCE ON FEEDLOT AND CARCASS TRAITS IN CATTLE

J. J. Cleere, G. E. Aiken, A. D. Herring, J. W. Holloway, H. Lippke, C. R. Long, M. F. Miller, K. R. Pond, F. M. Rouquette Jr., B. G. Warrington

Background. A cooperative experiment between TAMU-Overton (OVT), TAMU-Uvalde (UVL), and Texas Tech University (TTU) addressed the effect of pre-feedlot growth rates on feedlot and carcass traits in cattle. During two successive years, steers (n = 189) and heifers (n = 72) were assigned to two stocking rates (SR) at OVT and UVL to create different growth rates during the stocker grazing phase. Animals were either Angus, Angus x Angus-Brahman, Angus x Brahman-Hereford, Brahman, Hereford x Brahman, Braunvieh cross, or Bonsmara cross and stocked on 'TAM 90' annual ryegrass (*Lolium multiflorum*) (RG) at UVL or 'Maton' rye (*Secale cereale*) and RG at OVT from December-January to mid-May. Cattle were placed on feed at the TTU Alltech research feedlot in May 2000 and May 2001 to determine the influence of grazing growth rate (GGR) (High, Medium, and Low gains) on feedlot and carcass traits (Table 1). Cattle were assigned to pens within location, breed type, stocking rate, sex, and weight with 4 to 7 animals per pen. Animals were shipped to a commercial packing facility in Plainview, Texas when they reached approximately 0.4-inch of backfat and carcass data was collected by TTU personnel. Weight gain and feed intake were measured at 28 d intervals throughout the finishing period. Separate individual animal analyses were conducted for each location, sex, and breed.

Research Findings. Cattle from different stocked pastures at both OVT and UVL were separated into 3 ADG groups (GGR; Table 1). GGR affected end of grazing ultrasound measurements and initial weight in the feedlot. Feedlot performance of the UVL steers and OVT heifers was not affected by GGR. The OVT low and medium GGR steers had higher final feedlot ADG than the high GGR steers (4.0 and 3.9 vs. 3.5 lbs/d, respectively; $P < 0.05$). Final feedlot weights of the low and medium GGR animals within the three groups were lower than the high GGR animals due to an apparent failure to compensate for differences in initial feedlot weight ($P < 0.05$). Subtle differences in rib eye area were found between GGR groups in OVT steers, but no effect of GGR on marbling, fat thickness, or yield grade was found among the OVT steers, OVT heifers, or UVL steers (Table 2). The GGR affected hot carcass weight of all cattle ($P < 0.05$). OVT heifers that had higher GGR required fewer days in the feedlot. Cattle with higher gains during the winter grazing period had heavier final feedlot weights and carcass weights and subsequently higher carcass values. Stocking rate on pasture affected GGR and carcass traits, but had modest influence on animal performance in the feedlot. Thus, compensatory feedlot gains due to previous GGR was not a significant factor in this two-year experiment.

Application. Restricted growth of stockers on pasture may result in compensatory gains. With this study, the magnitude of the compensatory gains was minimal. Cattle that had high growth rates during the stocker period continued to perform during the feedlot phase of production. Programming growth oriented cattle to high gains during the stocker phase will not necessarily restrict performance during the finishing phase.

Table 1. Grazing growth rate (GGR), grazing location, and sex of calf effects on feedlot performance.

Grazing Growth Rate	Grazing Location	Calf Sex	Grazing Period ADG	Initial Grazing Fat[1,2]	Final Grazing Fat[1]	Initial Feedlot Weight	Final Feedlot Weight	Final Feedlot ADG
			(lbs/d)	**(in)**	**(in)**	**(lbs)**	**(lbs)**	**(lbs/d)**
High	Overton	M	2.4a	0.17	0.26a	834a	1279a	3.5a
Medium	Overton	M	1.7b	0.17	0.22b	751b	1240ab	3.9b
Low	Overton	M	0.7c	0.17	0.19c	682c	1197b	4.0b
High	Overton	F	2.5a	0.15a	0.28a	845a	1279a	4.2
Medium	Overton	F	1.7b	0.17b	0.24b	742b	1173a	3.8
Low	Overton	F	0.9c	0.16ab	0.20c	662c	1145b	4.0
High	Uvalde	M	2.6a	--	0.23a	822a	1240a	4.0
Medium	Uvalde	M	2.3b	--	0.22a	779a	1181b	3.7
Low	Uvalde	M	1.8c	--	0.18b	723b	1142b	3.7

[1]Real time ultrasound 12th rib backfat thickness
[2]Means within grazing location, calf sex, and a column lacking common letters differ ($P < 0.05$)

Table 2. Grazing growth rate (GGR), grazing location, and sex of calf effects on carcass traits.

Grazing Growth Rate	Grazing Location	Calf Sex	Hot Carcass Weight[1]	Marbling Score[2]	Est. KPH[3]	REA	Adjusted Fat Thickness	Yield Grade	Days on Feed
			(lbs)		**(%)**	**(in^2)**	**(in)**		
High	Overton	M	770a	458	2.2a	12.5a	0.6	3.5	129a
Medium	Overton	M	746ab	442	2.0b	12.1ab	0.5	3.3	125b
Low	Overton	M	712b	444	2.3a	11.5b	0.6	3.5	129a
High	Overton	F	769a	415	2.0	12.4	0.7	3.6	106a
Medium	Overton	F	697b	427	2.1	12.2	0.7	3.5	113b
Low	Overton	F	675b	422	1.8	12.1	0.6	3.2	121c
High	Uvalde	M	742a	521	2.0	11.9	0.6	3.4	108a
Medium	Uvalde	M	704b	530	2.1	11.7	0.6	3.3	110a
Low	Uvalde	M	684b	548	2.0	11.6	0.5	3.1	114b

[1]Means within grazing location, calf sex, and a column lacking common letters differ ($P < 0.05$)
[2]400-499 = Choice-, 500-599 = Choice°
[3]Kidney, pelvic, heart fat