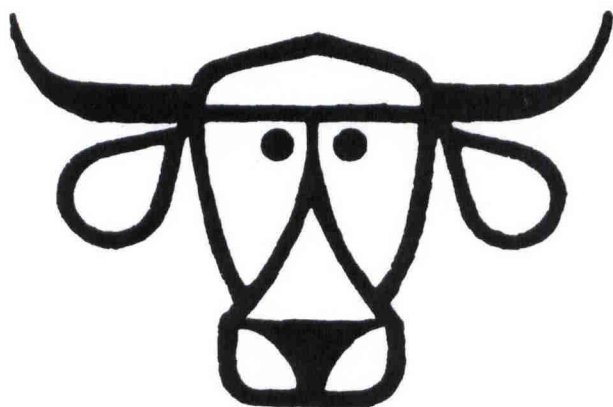




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INFLUENCE OF STOCKING RATE ON PUREBRED BRAHMAN COWS AND CALVES
vs F-1 (BRAHMAN X HEREFORD) COWS AND SIMMENTAL-SIRED CALVES

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SUMMARY

Purebred Brahman cows and calves, along with F-1 (Brahman x Hereford) cows and their Simmental-sired calves, were grazed on bermudagrass pastures at three stocking rates from about mid-July to early October during a 3-year period. The F-1 cows gained more, but also lost more weight than the Brahman cows at the various stocking rates. The Brahman bull calves gained as much or more than the 1/2 Simmental steer and heifer calves at every stocking rate. Both Brahman bull and heifer calves gained considerably more than the Simmental calves at the high stocking rate. It is not clear at this time if the weight-gain advantage is due to bull vs steer calves, or breed effects.

INTRODUCTION

The ability of a cow to withstand management abuse, whether planned or unplanned, is a trait that is often overlooked in pasture trials. The grazing behavior, vigor, etc. of lactating cows at a range of forage availabilities may provide valuable economic implications to the producer. This trial was initiated to ascertain the influence of various levels of forage availability or stocking rates on the performance of both purebred Brahman and commercial F-1 (Brahman x Hereford) cows and their suckling calves.

PROCEDURE

The pastures used in this three-year trial were both common and Coastal bermudagrass. These pastures were grazed at three levels of forage availability from mid-July until early October. The low forage available or high stocking rate pastures were grazed with sufficient pressure to restrict the ad libitum intake of the grazing cow. Grazing pressures were maintained across forage availability treatments using the put and take method which utilizes both test animals and regulator animals.

During each of the three years, eight F-1 (Brahman x Hereford) cows and their Simmental-sired calves represented average liveweight gains for each of the stocking rate treatments. Heifer and steer calves were equally represented within each pasture. Both sexes of Simmental-sired calves received a single implant of a growth promotant at approximately 3 months of age.

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With respect to the purebred Brahmans, heifer and bull calves were equally represented on each stocking rate. However, during the first year, only two pair were assigned to each treatment, and during the last two years, four pair were assigned to each treatment. In the first year of the trial, both Brahman and F-1 cows were in the same pastures of a particular stocking rate. In the last two years, all cows and their calves were separated according to breed and there was no mixed grazing of Brahman and F-1 cows. This was primarily a function of pasture and animal availability. Simmental-sired calves were born in February and March and Brahman calves were born in April and May.

All animals were weighed at approximate 28-day intervals. Pastures were sampled for available forage at 28-day intervals and for forage quality samples at 14-day intervals.

RESULTS AND DISCUSSION

Table 1 shows the forage available for each group of cattle during each of the three trials. The original intent was to provide a sufficiently light grazing pressure on the bermudagrass pastures so that spot grazing would essentially be nonexistent. In contrast, the heavy grazing pressures would be sufficiently heavy to prevent an accumulation of forage at dung and urine spots. When that data was expressed as pounds of forage dry matter per 100 pounds of animal body weight, ratios which exceeded 100 were assessed to be "medium" to "light" stocking rates. And, as the ratio approached 0, ad libitum intake was severely restricted. These ratios serve to document the relative relationship between available forage and body weight. In terms of stocking rates, low approximated .75 cow-calf pair per acre; medium, 1.5 pair per acre; and high, 2-3 pair per acre.

Table 2 shows the influence of stocking rate on average daily gains of both purebred Brahman cows and their calves. In general, with increasing stocking rate, the lactating cow lost increasing amounts of weight. During the third year, however, certain cows had unusual gains for their appropriate stocking rate treatment and thus the trend for cows was irregular during this year. Brahman bull calves gained more than the Brahman heifers at essentially all stocking rates. With an increase in stocking rate and a restricted ad libitum intake, the percent difference between bulls and heifers was greater than at the lower stocking rates.

Each of the 3-years' liveweight performance for the F-1 (Brahman x Hereford) cows and their Simmental-sired calves are presented in Table 3. Because of an earlier calving date, the Simmental calves were heavier at initiation of the trial than were the Brahman calves. During the second year of the trial, heifers outgained steers at every stocking rate. In contrast to the Brahman calf performance, the Simmental-sired heifer calves exceeded or were very similar to steer calves at the high stocking rate.

Table 4 shows the 3-year average performance of both breeds of cows and calves at each stocking rate. It was interesting to note

that the F-1 cows had larger fluctuations in weight at the different stocking rates. The F-1 cows gained more weight at the low stocking rate (.70 vs .12) and lost more weight than the Brahmans at the high stocking rate (-1.55 vs -.94). Another noteworthy point is that the percent differences between the Brahman bull and heifer calves were greater than the percent differences between the 1/2 Simmental calves. In addition, the Brahman bull calves had equal or slightly higher average daily gain (ADG) than the Simmental-sired steers. Further, the Brahman bull calves had more than double the ADG of the Simmental steers at the high stocking rate; and, likewise the Brahman heifers gained .30 lbs/hd/day more than the Simmental heifers at the high stocking rate. These differences between the Brahman calves and Simmental-sired calves at the high stocking rate may be due in part to age of calf, relative milk production of the dam and the effect of stocking rate on the percent reduction in milk, differences in rumen function and/or efficiency of utilization of forages, or a combination of these along with other as yet undefined relationships.

By knowing the magnitude of animal performance decline with increasing grazing pressures or stocking rates, management decisions may be made which will economically and biologically optimize the year-long forage-animal system.

TABLE 1. FORAGE AVAILABLE FOR CONSUMPTION BY BRAHMAN AND F-1 (BRAHMAN X HEREFORD) COWS AND CALVES AT THREE STOCKING RATES

Date	LOW STOCKED			MEDIUM STOCKED			HIGH STOCKED		
	lb DM/ac ¹	lb DM ²	100 lb BW	lb DM/ac	lb DM	100 lb BW	lb DM/ac	lb DM	100 lb BW
TRIAL 1 F-1 (BxH) and Brahman									
7-24 to 8-22	5,400	310		4,824	180		1,560	21	
8-22 to 9-21	11,200	400		6,528	150		672	10	
9-21 to 10-10	6,819	240		3,672	85		312	4	
TRIAL 2 F-1 (BxH)									
7-15 to 8-13	3,768	355		3,732	200		1,368	48	
8-13 to 9-3	3,156	175		1,776	85		685	19	
9-3 to 9-26	3,072	295		2,220	130		1,008	44	
TRIAL 3 F-1 (BxH)									
7-15 to 8-13	5,277	250		4,127	120		1,547	25	
8-13 to 9-3	4,234	205		3,394	105		695	11	
9-3 to 9-26	4,005	180		2,302	71		972	19	
TRIAL 2 Brahman									
7-15 to 8-13	2,088	200		4,104	230		1,632	84	
8-13 to 9-3	4,848	410		3,120	170		1,512	79	
9-3 to 9-26	2,784	230		3,216	180		840	45	
TRIAL 3 Brahman									
7-15 to 8-13	4,460	250		6,260	260		2,183	130	
8-13 to 9-3	3,886	200		5,804	220		840	24	
9-3 to 9-26	3,600	180		3,500	120		888	39	

¹Pounds dry matter forage per acre

²Pounds dry matter forage per pound of body weight of animal

TABLE 2. LIVELWEIGHT GAINS OF PUREBRED BRAHMAN COWS AND CALVES GRAZING DIFFERENTLY STOCKED BERMUDAGRASS PASTURES

ITEM	LOW STOCKED	MEDIUM STOCKED	HIGH STOCKED
<u>TRIAL 1</u>			
Starting Date	7-24	7-24	7-24
Ending Date	10-10	10-10	10-10
No. Days on Pasture	78	78	78
Initial Weights (lbs)			
Cows	1022	1029	981
Bull Calves	315	235	217
Heifer Calves	263	247	206
Average Daily Gain (lbs)			
Cows	.29	.36	-.89
Bull Calves	2.44	1.83	1.35
Heifer Calves	1.73	1.85	.63
<u>TRIAL 2</u>			
Starting Date	7-15	7-15	7-15
Ending Date	9-26	9-26	9-26
No. Days on Test	73	73	73
Initial Weights (lbs)			
Cows	1107	1121	1190
Bull Calves	284	297	263
Heifer Calves	228	229	247
Average Daily Gain (lbs)			
Cows	.18	-.44	-2.04
Bull Calves	2.30	1.94	1.71
Heifer Calves	2.14	1.62	1.34
<u>TRIAL 3</u>			
Starting Date	7-17	7-17	7-17
Ending Date	10-6	10-6	10-6
No. Days on Test	81	81	81
Initial Weights (lbs)			
Cows	1123	1035	958
Bull Calves	327	313	276
Heifer Calves	313	271	321
Average Daily Gain (lbs)			
Cows	-.13	.08	.12
Bull Calves	1.83	1.91	1.29
Heifer Calves	1.68	1.56	0.86

TABLE 3. LIVELWEIGHT GAINS OF F-1 (BRAHMAN X HEREFORD) COWS AND
SIMMENTAL-SIRED CALVES GRAZING DIFFERENTLY STOCKED BERMUDAGRASS
PASTURES

ITEM	LOW STOCKED	MEDIUM STOCKED	HIGH STOCKED
<u>TRIAL 1</u>			
Starting Date	7-24	7-24	7-24
Ending Date	10-10	10-10	10-10
No. Days on Test	78	78	78
Initial Weights (lbs)			
Cows	1079	893	1029
Steer Calves	479	473	464
Heifer Calves	430	427	428
Average Daily Gain (lbs)			
Cows	.71	.48	-1.98
Steer Calves	2.02	1.73	.51
Heifer Calves	1.89	1.62	.73
<u>TRIAL 2</u>			
Starting Date	7-15	7-15	7-15
Ending Date	9-26	9-26	9-26
No. Days on Test	73	73	73
Initial Weights (lbs)			
Cows	994	1073	1031
Steer Calves	459	461	449
Heifer Calves	424	436	454
Average Daily Gain (lbs)			
Cows	.77	.13	-1.06
Steer Calves	2.40	2.11	.83
Heifer Calves	2.76	2.15	.94
<u>TRIAL 3</u>			
Starting Date	7-15	7-15	7-15
Ending Date	10-6	10-6	10-6
No. Days on Test	83	83	83
Initial Weights (lbs)			
Cows	1053	1036	1067
Steer Calves	494	498	498
Heifer Calves	474	469	470
Average Daily Gain (lbs)			
Cows	.60	.38	-1.59
Steer Calves	1.88	1.51	.32
Heifer Calves	1.70	1.47	.24

TABLE 4. THREE-YEAR AVERAGE LIVEWEIGHT GAINS OF BRAHMAN AND F-1 (BRAHMAN X HEREFORD) COWS AND THEIR CALVES FROM THREE DIFFERENTLY STOCKED BERMUDAGRASS PASTURES

ITEM	LOW STOCKED ¹		MEDIUM STOCKED		HIGH STOCKED	
	Brah	F-1	Brah	F-1	Brah	F-1
Starting Date	7-19	7-18	7-19	7-18	7-19	7-18
Ending Date	10-4	10-4	10-4	10-4	10-4	10-4
No. Days on Test	77	78	77	78	77	78
Initial Weight (lbs)						
Cows	1084	1042	1062	1001	1043	1042
Male Calves ²	309	478	282	478	252	471
Heifer Calves	268	443	249	444	258	451
Average Daily Gain (lbs)						
Cows	.12	.70	0	.33	-.94	-1.55
Male Calves	2.19	2.10	1.90	1.78	1.45	.56
Heifer Calves	1.85	2.12	1.68	1.75	.94	.64

¹Cows are F-1 (Brahman x Hereford) and calves are 1/2 Simmental.

²Brahman calves are bulls; Simmental-sired calves are steers.