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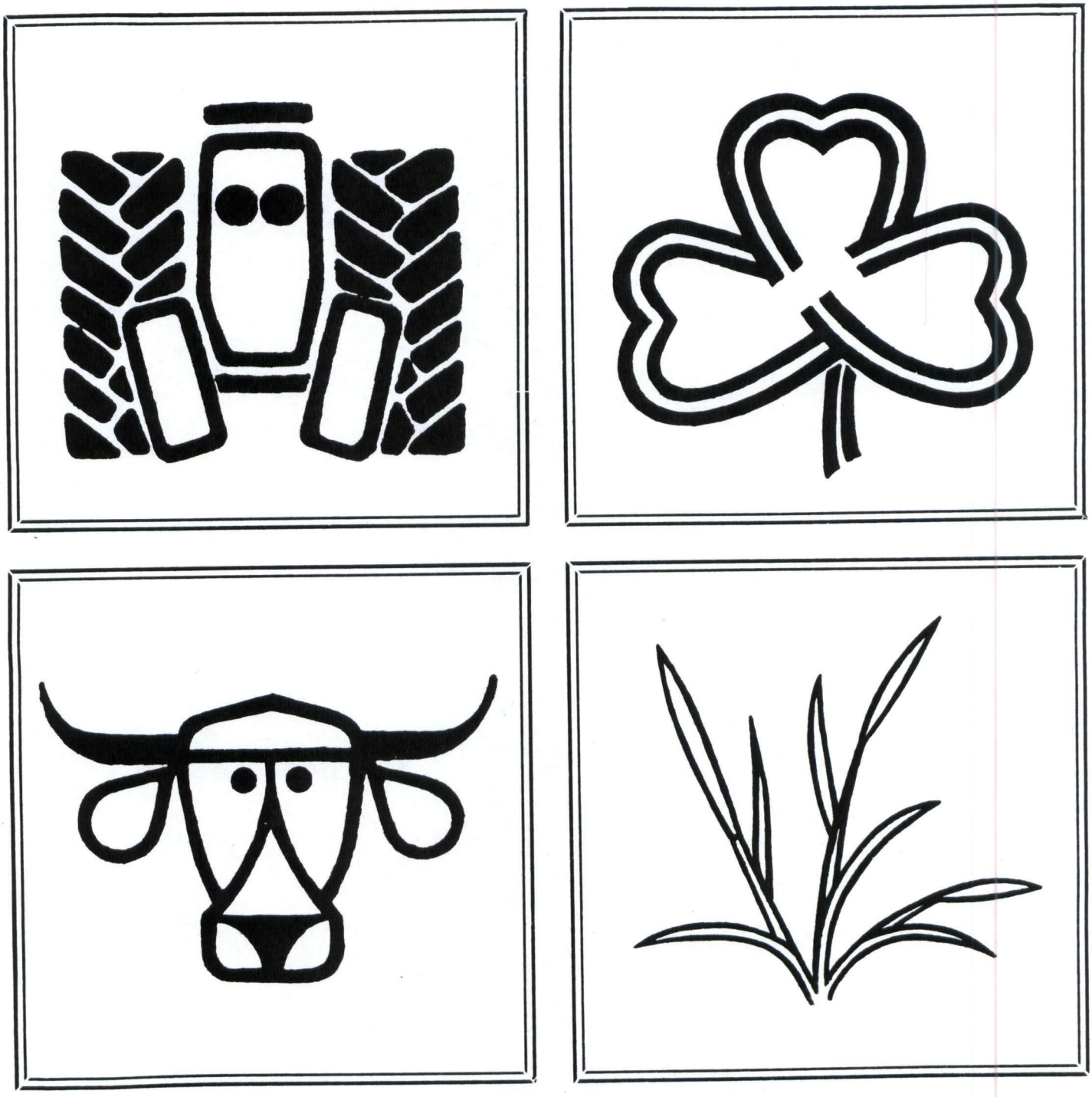

Forage Research in Texas

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Cow and Calf Response to Various Levels of Available Forage of a Coastal Bermudagrass-Clover-Ryegrass Pasture

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SUMMARY

Coastal bermudagrass pastures were oversown with 'Yuchi' arrowleaf clover and 'Gulf' ryegrass during 1980, and 'Mt. Barker' subterranean clover and 'Gulf' ryegrass during 1981 and 1982. Pastures were grazed to three different levels of available forage (stocking rate) by mature F-1 Brahman x Hereford cows and their Simmental-sired calves. Pastures grazed to approximately 700 lbs/ac dry matter forage above ground level supported an average of 3.36 cows and calves per acre during the three-year trial. Forage grazed to approximately 1500 lbs/ac and 2500 lbs/ac, respectively, supported stocking rates of 1.38 and .87 cows and calves per acre. The lightly- and medium-stocked pastures resulted in calf gains of 2.67 and 2.56 lbs/hd/day, respectively, during the three-year trial. Suckling calves grazing the high-stocked pastures gained only 1.58 lbs/hd/day, but produced 712 lbs gain per acre.

Introduction

The decision to optimize or maximize gain per animal or gain per acre involves many factors including level of risk, management expertise, current and future pricing situation, continuous ownership during the post-weaning phase, availability of credit, etc. Before any of the above factors are relevant to the decision-making process, the producer must be aware of the potential animal response at more than one stocking rate or level of available forage within a given climatic area. Thus, this trial was initiated to evaluate cow and calf gains to three different levels of forage availability.

Procedure

Coastal bermudagrass pastures were sod-seeded with a hoe-type drill (John Deere) to 'Yuchi' arrowleaf clover and 'Gulf' ryegrass in October 1979 and to 'Mt. Barker' subterranean clover and 'Gulf' ryegrass in October 1980 and 1981. Total annual fertilizer applied during each of the three years was 200-100-100 lbs/ac of N-P_2O_5-K_2O. All of the P_2O_5 and K_2O was applied in November and the N was applied in four equal split applications beginning in early February. Four F-1 Brahman x Hereford cows and their fall-born Simmental-sired calves were assigned to one of three pastures. Additional cow-calf pairs were added as "grazers" or "regulators," as warranted by forage growth, in a put-and-take technique of grazing. Forage availability was measured to ground level on a monthly basis. Cows and calves were weighed on monthly intervals throughout the study period.

Discussion

Available forage on each of the three pastures is shown in Table 1. A successful attempt was made to graze one pasture (high-stocked) to such a level so as to eliminate spot grazing. With the Coastal-clover-ryegrass pastures, this level was at or near 700 lbs/ac dry matter. The lightly-stocked pastures were grazed to a desired level that would allow for maximum selection of forage by the animal (>2000 lbs/ac dry matter). And, the medium forage availability levels were intermediate between high and low and would be a vivid example of spot grazing. The grazing pressure and stocking rates necessary to achieve the desired levels of forage availability are shown in Table 2. On the low forage available pasture, approximately 5157 lbs body weight/acre or a stocking rate of 3.36 cows and calves per acre were required to visually eliminate dung pat and urine spot forage regrowth. The medium- and lightly-stocked pastures supported 1.38 and .87 cows and calves per acre, respectively.

Tables 3, 4, and 5 show steer, heifer, and cow weight changes when grazing lightly-, medium-, and high-stocked pastures, respectively. In 1981, steer calves gained nearly 3 lbs/hd/day on the lightly- and medium-stocked pastures although the medium-stocked pastures (1.39 pair/ac) had approximately 1000 lbs body weight/acre more than the lightly-stocked pastures (.84 pair/ac). Table 6 shows the weight gain summary for all stocking rates during the three-year trial. Calves grazing at the high stocking rates gained about one lb/hd/day less than those calves with ad libitum forage intake. Steers gained from 40 to 78 lbs/hd more than heifers. On the high-stocked pastures, cows with steer calves lost nearly .4 lbs/hd/day more than cows with heifer calves. Average stocking rates ranged from .87, 1.38, and 3.36, respectively, for lightly-, medium-, and high-stocked pastures. Calf gain per acre increased positively from 313 lbs/ac on lightly-stocked pastures to 712 lbs/ac on high-stocked pastures. It is interesting to note that the high-stocked pastures (3.36 cows and calves/acre) were equivalent to 10 500-weight calves per acre; however at that grazing pressure, only the suckling calf would have demonstrated a positive weight gain (1.58 lbs/hd/day). It is also noteworthy to mention that on these continuously grazed pastures, the Coastal bermudagrass stand has not diminished. However, risk is increased on these high-stocked pastures because of a lack of forage reserve. But, in a forage systems approach, the higher stocking rate may be desired for a portion of the ranch in the event ownership was to continue post-weaning and an alternative site was available for supplying hay and/or insurance grazing.

Table 1. Monthly available forage at three grazing pressures of sod-seeded Coastal bermudagrass.

Date	High Stocked	Medium Stocked	Lightly Stocked
	lbs/ac		
1-27-80	1872	1632	1632
3-19-80	864	864	888
4-29-80	1440	1776	2136
5-27-80	768	3048	3456
6-27-80	648	4920	4608
AVG	1118	2448	2544
2-25-81	1487	1655	1679
3-24-81	360	1319	2231
4-22-81	960	1511	2999
5-11-81	192	1080	2926
6-24-81	936	3742	4941
AVG	787	1861	2955
3-11-82	1560	1512	1896
4-6-82	192	960	1440
5-4-82	384	1008	1968
6-1-82	996	1589	2750
6-29-82	720	1944	2856
AVG	770	1403	2182

Table 2. Average stocking rates used to maintain forage availability on Coastal bermudagrass-clover-ryegrass.

ITEM	Lightly Stocked	Medium Stocked	High Stocked
1980			
Stocking Rate (AU/ac)[1]	.92	1.34	3.38
Body Wt/ac (lbs)[2]	1519	2149	5134
1981			
Stocking Rate (AU/ac)	.84	1.39	3.58
Body Wt/ac (lbs)	1447	2463	5338
1982			
Stocking Rate (AU/ac)	.85	1.40	3.12
Body Wt/ac (lbs)	1494	2443	4998
3-Year Avg			
Stocking Rate (AU/ac)	.87	1.38	3.36
Body Wt/Ac (lbs)	1487	2352	5157

[1]One animal-unit (AU) = one cow + one calf.

[2]Body weight is combined weight of cow and calf.

Table 3. Cow-calf performance from lightly-stocked Coastal bermudagrass-clover-ryegrass pastures.

ITEM	1980		1981		1982		3-Year Average	
	Cow	Calf	Cow	Calf	Cow	Calf	Cow	Calf
Starting Date	2-28		2-24		3-10		3-2	
Final Date	7-8		7-8		7-27		7-14	
No. Days on Test	131		134		139		135	
STEERS								
No. Animals	2	2	2	2	2	2	6	6
Initial Wt. (lbs)	1124	396	1020	378	1129	416	1091	397
Final Wt. (lbs)	1146	753	1155	778	1349	816	1217	782
Wt. Gain (lbs)	22	357	135	400	220	400	126	386
ADG (lbs)	.17	2.73	1.01	2.99	1.58	2.88	.92	2.87
HEIFERS								
No. Animals	2	2	2	2	2	2	6	6
Initial Wt. (lbs)	1050	355	1168	380	1008	378	1075	371
Final Wt. (lbs)	1108	669	1295	715	1203	729	1202	704
Wt. Gain (lbs)	58	314	127	335	195	351	127	333
ADG (lbs)	.44	2.40	.95	2.50	1.40	2.53	.93	2.48
ALL CALVES								
No. Animals	4	4	4	4	4	4	12	12
Initial Wt. (lbs)	1087	376	1094	379	1069	397	1083	384
Final Wt. (lbs)	1127	711	1225	747	1276	773	1209	744
Wt. Gain (lbs)	40	335	131	368	207	376	126	360
ADG (lbs)	.31	2.56	.98	2.75	1.49	2.71	.93	2.67

Table 4. Cow-calf performance from medium-stocked Coastal bermudagrass-clover-ryegrass pastures.

ITEM	1980		1981		1982		3-Year Average	
	Cow	Calf	Cow	Calf	Cow	Calf	Cow	Calf
Starting Date	2-28		2-24		3-10		3-2	
Final Date	7-8		7-8		7-27		7-14	
No. Days on Test	131		134		139		135	
STEERS								
No. Animals	2	2	2	2	2	2	6	6
Initial Wt. (lbs)	1025	357	1123	370	1036	404	1061	377
Final Wt. (lbs)	1165	711	1280	765	1192	805	1212	760
Wt. Gain (lbs)	140	354	157	395	156	401	151	383
ADG (lbs)	1.07	2.70	1.17	2.95	1.12	2.88	1.12	2.84
HEIFERS								
No. Animals	2	2	2	2	2	2	6	6
Initial Wt. (lbs)	1064	333	1203	368	1124	375	1130	359
Final Wt. (lbs)	1169	588	1295	680	1316	724	1260	664
Wt. Gain (lbs)	105	255	92	312	192	349	130	305
ADG (lbs)	.80	1.95	.69	2.33	1.38	2.51	.96	2.26
ALL CALVES								
No. Animals	4	4	4	4	4	4	12	12
Initial Wt. (lbs)	1045	345	1163	369	1080	390	1096	368
Final Wt. (lbs)	1167	650	1288	723	1254	765	1236	713
Wt. Gain (lbs)	122	305	125	354	174	375	140	345
ADG (lbs)	.93	2.33	.93	2.64	1.25	2.70	1.04	2.56

Table 5. Cow-calf performance from high-stocked Coastal bermudagrass-clover-ryegrass pastures.

ITEM	1980		1981		1982		3-Year Average	
	Cow	Calf	Cow	Calf	Cow	Calf	Cow	Calf
Starting Date	2-28		2-24		3-10		3-2	
Final Date	7-8		7-8		7-27		7-14	
No. Days on Test	131		134		139		135	
STEERS								
No. Animals	2	2	2	2	2	2	6	6
Initial Wt. (lbs)	1190	376	978	370	1136	430	1101	392
Final Wt. (lbs)	1095	612	923	575	1163	686	1060	624
Wt. Gain (lbs)	-95	236	-55	205	27	256	-41	232
ADG (lbs)	-.73	1.80	-.41	1.53	.19	1.84	-.32	1.72
HEIFERS								
No. Animals	2	2	2	2	2	2	6	6
Initial Wt. (lbs)	954	339	1138	348	987	383	1026	357
Final Wt. (lbs)	952	555	1078	550	1078	542	1036	549
Wt. Gain (lbs)	-2	216	-60	202	91	159	10	192
ADG (lbs)	-.02	1.65	-.45	1.51	.65	1.14	.06	1.43
ALL CALVES								
No. Animals	4	4	4	4	4	4	12	12
Initial Wt. (lbs)	1072	358	1058	359	1062	407	1064	375
Final Wt. (lbs)	1024	584	1001	563	1121	614	1049	587
Wt. Gain (lbs)	-48	226	-57	204	59	207	-15	212
ADG (lbs)	-.37	1.73	-.43	1.52	.42	1.49	-.13	1.58

Table 6. Three-year averages of cow-calf performance from different stocking rates of Coastal bermudagrass-clover-ryegrass pastures.

ITEM	Lightly Stocked		Medium Stocked		High Stocked	
	Cow	Calf	Cow	Calf	Cow	Calf
	(lbs)					
STEERS						
Initial Wt.	1091	397	1061	377	1101	392
Weaning Wt.	1217	782	1212	760	1060	624
Gain	126	386	151	383	-41	232
ADG	.92	2.87	1.12	2.84	-.32	1.72
HEIFERS						
Initial Wt.	1075	371	1130	359	1026	357
Weaning Wt.	1202	704	1260	664	1036	549
Gain	127	333	130	305	10	192
ADG	.93	2.48	.96	2.26	.06	1.43
STEER ADVANTAGE						
Gain	-1	53	21	78	-51	40
ADG	-.01	.39	.16	.58	-.38	.29
ALL CALVES						
Initial Wt.	1083	384	1096	368	1064	375
Weaning Wt.	1209	744	1236	713	1049	587
Gain	126	360	140	345	-15	212
ADG	.93	2.67	1.04	2.56	-.13	1.58
STOCKING RATE						
Animal-units/ac	.87		1.38		3.36	
Body weight/ac	1487		2352		5157	
Gain/ac	110	313	193	476	-50	712