

RELATIVE FORAGE REQUIREMENTS OF SPRING AND FALL

COW-CALF PAIRS ON RANGE

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In conjunction with the fall calving program being carried out at this Station, a study was initiated in 1972 to compare the relative forage requirements of spring-summer grazing season. Two years of a planned 3-year study have now been completed and are summarized here.

EXPERIMENTAL PROCEDURE

Two trials, employing two different approaches, have been conducted. In trial 1, 6 spring and 6 fall cow-calf pairs were fed in drylot. Fescue or meadow hay was cut at intervals of a few days throughout the summer and fed free choice from May 16 to August 21, and the intake for each cow and her calf was measured individually.

In the second trial, extending from May 10 to August 28, 6 spring and 6 fall pairs grazed on separate crested wheatgrass pastures for four, 5-10 day periods at approximately 1-month intervals. Relative intake was estimated by clipping randomly located plots before and after grazing to measure the amount of forage consumed.

The animals were weighed and milk production by the dams was measured periodically during the trial periods. All of the comparisons reported herein use the spring cow and calf as a reference standard to which the fall pair is compared.

OBSERVATIONS

The two major variables in this study were the dam's milk production and the weight of the calf. Average beginning weights for spring calves for the two years was 148 pounds and for fall calves, 345 pounds. Respective final weights averaged 296 and 515 pounds. The difference in direct hay intake for these animals is illustrated in Table 1. Hay consumption by fall calves in 1972 exceeded that for spring calves by over two and one-half times.

The spring cow, producing nearly twice the amount of milk as did her fall counterpart, consumed 130 pounds more hay than did the fall cow. Over the entire 1972 trial period, intake by the fall pair exceeded that for the spring pair by 345 pounds, a difference of 13%.

Gains for the fall calf were 35% greater than for the spring calf with a similar difference (33%) in combined gain by the cow and calf. The feed required to produce a pound of beef (cow and calf) was nearly 20% less for the fall pair, reflecting the greater efficiency of producing gain directly from grass, rather than first converting this to milk.

Table 1. Feed intake, gain, efficiency, and milk production of spring and fall cow-calf pairs

	1972 ^{1/}			1973 ^{2/}		
	Spring	Fall	Fall as % of spring	Spring	Fall	Fall as % of spring
	lb.	lb.	%	lb.	lb.	%
Feed intake						
Cow	2,294	2,164	94	-----	-----	---
Calf	276	751	272	-----	-----	---
Cow + calf	2,570	2,915	113	4,127	4,949	120
A.D.G., calf	1.14	1.54	135	1.74	1.76	100
Total gain						
Cow + calf	196	260	133	338	379	112
Feed, gain						
Cow + calf	14.3	11.7	82	-----	-----	---
Av. daily milk production						
	8.2	4.7	57	9.6	3.9	41

^{1/} Drylot trial from May 16 to August 21.

^{2/} Before and after grazing-clipping: May 10 to August 28.

The experimental design in 1973 did not lend itself to separating the intake of the cow and calf, and although actual intake is over-estimated, relative intakes by pairs can be estimated fairly well. The magnitude of intake differences in this trial were greater than those found in the first trial with fall pair exceeding spring pair intake by 20%. Calf gains were nearly identical, although fall cows gained somewhat more than did spring cows, while producing nearly 6 pounds less milk per day.

At this Station it is customary to wean fall calves during the latter part of July and the spring calves during the first part of September, since studies have shown that by these times, gains will have dropped to well below 1 pound per day. Another alternative for fall calving would be to wean the calves prior to turning the cows out on the range in the spring. Table 2 shows the relative forage consumption if either of these two management practices were employed.

Table 2. Relative feed intake for spring and fall cows and calves assuming early weaning of fall calves

	1972			1973		
	Spring	Fall	Fall as % of spring	Spring	Fall	Fall as % of spring
	lb.	lb.	%	lb.	lb.	%
Feed intake ^{1/}						
Cow	2,294	2,164	94	-----	-----	---
Calf	276	463	168	-----	-----	---
Cow + calf	2,570	2,627	102	4,127	4,330	105
Feed intake ^{2/}						
Cow	2,294	1,839	80	-----	2,990	---
Calf	276	0	---	-----	0	---
Cow + calf	2,570	1,839	72	4,127	2,990	72

1/ Fall calf weaned approximately July 22.

2/ Fall calf weaned prior to turnout on the range.

Differences of 2 and 5% were found for 1972 and 1973, respectively, assuming that the fall calves were weaned in July. If the fall cows were turned out on the range as dry cows, estimated forage intake would only be 72% of that for the spring pair. Measured intake was adjusted downward approximately 15% for these cows to account for the measured levels of milk production. On this basis, 135-140 dry fall cows could be expected to consume a similar quantity of forage as 100 spring pairs.

From a range management viewpoint, the pattern of forage utilization is probably of greater importance than gross consumption. For example, heavy utilization during the spring growing season would have more serious consequences for the continued productivity of the range than would heavy use following maturation of the forage.

When comparing possible range utilization, as measured by relative intake, figure 1 indicates that initial utilization by fall pairs would exceed that for spring pairs by an average of about 5%. From the middle of June to the first part of August, differences ranged mostly from 10 to 15%, and increased slightly for the latter part of August. The relative differences for 1973, though of greater magnitude, show a similar utilization pattern.

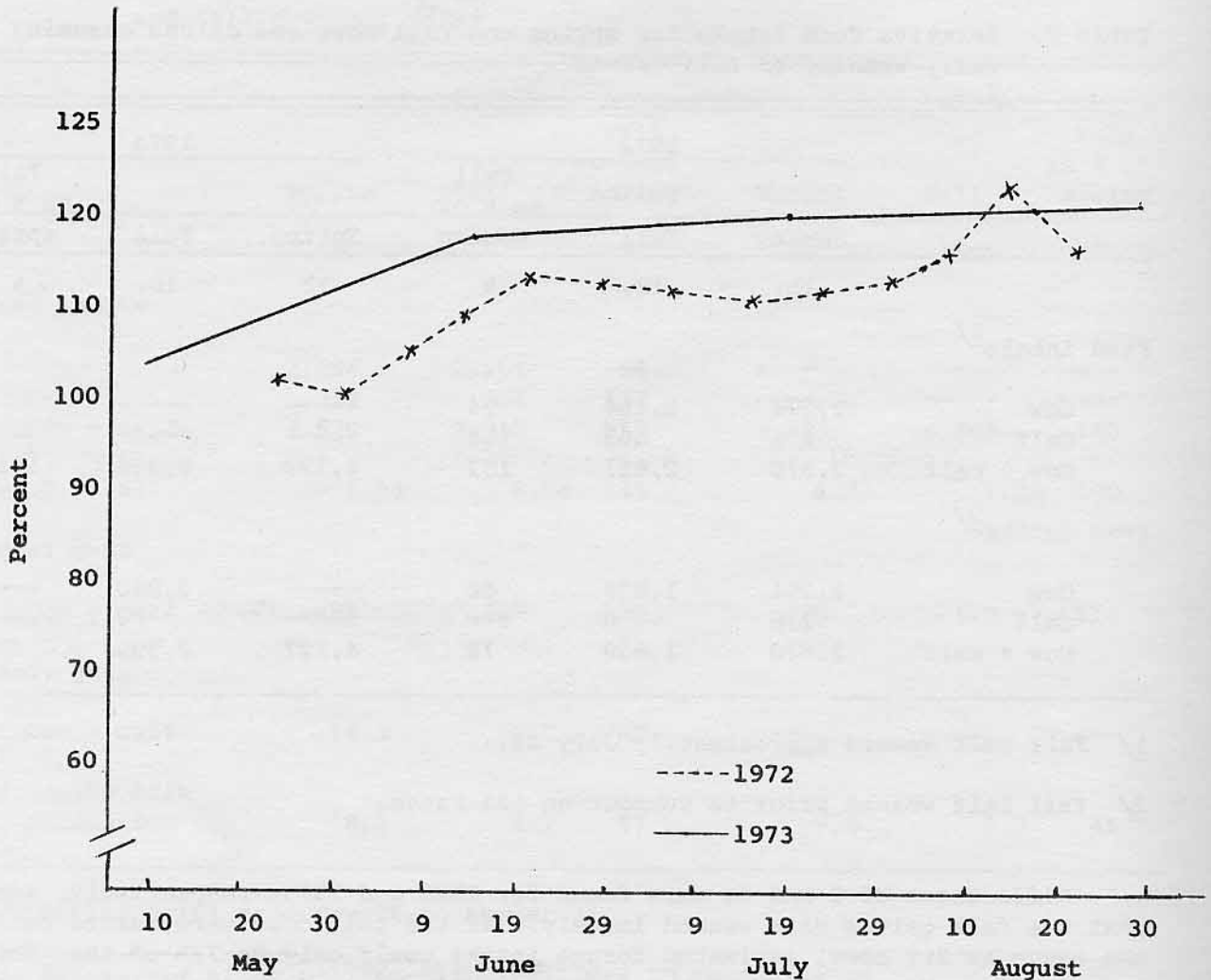


Figure 1. Fall cow-calf pairs intake as a percent of spring cow-calf pairs intake with advance in season.

These data suggest that the heaviest relative use by fall pairs would not occur until after the forage had matured, and that the least grazing pressure would take place during the most critical period for forage growth.

A factor which has not been adequately assessed by this study is the energy requirement for travel. It is recognized that during the initial 3-5 months following birth, the calf travels little, spending much of its time resting (often near a watering spot) while the mother grazes nearby. This tends to place heavier grazing pressure on areas immediately adjacent to water locations. As the calf grows older, his grazing and travel patterns begin to approximate those of his mother. Thus, the fall calf, already about 6 months old when going on range, would travel much more than the spring calf, resulting in a correspondingly greater energy requirement. On the other hand, this increased requirement for travel might well be compensated for, in terms of the general welfare of the range forage, by the farther ranging fall cow and calf, which would result in a more even utilization of the total range.