

The plane of nutrition during the first winter as a weaner calf is most severe on the growing heifer in retarding body and skeletal development, and in delaying the appearance of heat and conception. Adverse effects in terms of body weight and skeletal development, however, can be largely recovered on good summer pasture, or by a High plane of nutrition during the second winter. A continual Low or Moderate plane of nutrition during the winter still apparent in terms of body weight and skeletal size at 2.5 years.

A reversal in plane of nutrition from High to Low appears to be more severe on the young heifer than the opposite treatment. Although heifers on the High regime make good gains as calves and conceive early, they have little body reserve for milk production if fed poorly the second winter, and gains of their calves from birth to weaning have been disappointing. In addition, they are slow to rebreed for the following calf crop.

Of the programs studied, the pattern appeared most beneficial for the young heifer. Neither of the alternate planes of nutrition studied in these experiments were more advantageous than the Moderate level each winter.

Feeding Protein Supplements to Range Beef Cows at 2, 4 or 6-Day Intervals

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Cattle wintering on native range in Oklahoma and most parts of the Southwest need additional protein from November to mid-April. It is common practice to feed a protein supplement either daily or every other day, at twice the daily allowance. In an attempt to reduce labor, or where cattle are wintered in rough range areas, and it is difficult to "cake" them uniformly, self-limiting supplements such as those containing salt are commonly used.

Theoretically, it is desirable that the protein (or nitrogen) necessary for the rumen bacteria to break down fibrous feeds be provided each 24-hour period. This would assure an even source and amount of protein or nitrogen for the rumen bacteria. Tests at several stations have failed to show a significant difference between feeding the protein supplement every day or on alternate days.

More recent tests in west Texas, at the Woodward station, and at Nebraska have shown that under certain conditions it may be possible to lengthen the feeding interval. Such a procedure was tested under

"tall grass" conditions at the Lake Blackwell range, where protein is critically deficient during the winter. Two trials have been completed, and another is in progress, in which mature beef cows calving in February and March were wintered on bluestem pastures and supplemented with the same average daily allowance of cottonseed meal—but fed at 2, 4 or 6-day intervals. The results of the first two trials are presented.

PROCEDURE

Two groups of mature cows were used in this study. Within each group, they were allotted to one of three treatments, with 16 or 20 cows each, on the basis of past history, age and body weight. Within each group, one lot was fed an average of 2½ lb. of cottonseed meal pellets every other day (5 lb. per feed). Cows of Lot 2 received the same average daily cottonseed meal intake, but fed each 4th day (10 lb. per head). Cows of Lot 3 received the entire 6-day allowance at one feeding (15 lb. per head). The supplements were fed in troughs to prevent waste. The cows grazed comparable bluestem pastures, and were rotated frequently to minimize pasture differences. A mineral mix of 2 parts salt and 1 part bone meal was available, free choice, at all times.

RESULTS

The average results obtained in the two trials are summarized in Table 1. Only those cows successfully raising a calf to weaning were included in the data. All cows lost weight up to calving, as indicated by their weight change from early October to the last weighing before calving (February 1). Such weight losses amounted to 72, 47, and 70 lb. per head for the 2, 4 and 6-day feeding regimes, respectively.

The same pattern existed for the entire winter period, as shown by the weight loss from October to May 1. Overall, body weight losses during the winter were within the range acceptable for spring calving cows (less than 18% of fall weight), and showed no adverse effect from the lengthened feeding interval practiced in Lots 2 and 3.

Average birth dates of the calves were similar since the cows were not on treatment during the winter prior to breeding. Birth weights, however, might be expected to reflect the level of nutrition of the dam prior to calving. These showed no adverse effect from 4 and 6-day feeding intervals.

Gains of the calves from birth to spring were slightly in favor of those from dams on the 4 and 6-day regimes. Average weaning weights, corrected for sex, were 433, 440, and 428 lb. for Lots 1, 2 and 3, respectively, and again showed no detrimental effects.

Results of the trial now in progress, with 20 cows per treatment and the same feeding intervals as described above, show averaged losses of 79, 65 and 85 lb. per head to calving (February 1).

Table 1.—Effect of Feeding Protein Supplements to Range Beef Cows At 2, 4 and 6-Day Intervals*

Lot Number	1	2	3
Interval between feedings	2 days	4 days	6 days
Cottonseed meal per head per feeding, lb.	5	10	15
Number of cows per lot	36	34	32
Average weight per cow, lb.			
Initial, Nov. 10	1035	1042	1038
Winter, before calving, Feb. 1	963	995	968
Spring, May 1	850	894	868
Fall, Oct. 10	1066	1056	1048
Gain to calving	— 72	— 47	— 70
Winter gain	— 185	— 148	— 170
Yearly gain	31	14	10
Av. birth date of calves, March	5	7	8
Av. weight per calf,** lb.			
Birth	77	78	77
Spring	144	158	151
Weaning	433	440	428

* Average of two trials.

** Corrected for sex by the addition of 8 lb. to birth wt., 7 lb. to spring wt., and 24 lb. to weaning weight of each heifer calf.

Despite a theoretical basis for the belief that beef cattle on low protein roughage should have supplemental protein daily, or at least every other day, the results of these trials show no detrimental effects from 4 and 6-day intervals of feeding range cows. A 1960-61 trial with yearling heifers at this station resulted in winter losses of 2, 8 and 26 lb. per head during a 137-day wintering period for 2, 4 and 6-day intervals of feeding. This may reflect the more critical requirement for protein by the young, growing heifer.

It was observed that cows fed their allowance of cottonseed meal pellets at 6-day intervals required more than a day to clean up the supplement. No difficulty with digestive disturbances, scouring, or founder was observed. Perhaps the larger amount of supplement given at one time permitted the smaller and more timid cows to obtain an equal share of the supplement offered. Differences in grazing patterns could not be determined, since the cows were in adjacent pastures and those fed at 4 and 6-day intervals tended to come to the feeding area whenever the Lot 1 cows were being caked.

SUMMARY

Feeding the same average daily amount of protein supplement (cottonseed meal pellets) to range beef cows at 2, 4 or 6-day intervals showed no adverse effect from lengthening the feeding intervals as reflected in body weight change during the winter, or birth and weaning weights of the calves. The trial is being repeated. For stocker cattle and cows up to calving, it appears that some use can be made of a lengthened feeding interval where difficult terrain or labor are factors, providing the procedure is in line with good management practices.