Creep-Feeding Spring-Born Beef Calves Grazing Bermudagrass Pasture

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Story In Brief

A creep-feeding study involving 68 spring-born nursing beef calves grazing bermudagrass pasture was conducted to compare the effectiveness of three widely different types of creep-feeds for increasing weaning weights and net returns. One group received no creep and served as controls. The three creep-feeds compared were (1) sudangrass pasture; (2) alfalfa hay pellets; and (3) a high-protein, high-energy mixed ration.

Weaning weights of all creep-fed lots were higher than weights of control calves. Increases in weaning weights above controls were 8.0, 10.1, and 14.0 percent, respectively, for lots receiving sudangrass pasture, pelleted alfalfa hay, and the mixed ration. Sudangrass showed considerable promise as a creep-pasture in the early part of the study but growth stopped due to lack of moisture. Feed required for each additional pound of gain above the controls were 9.6 and 9.4 lb. for lots fed alfalfa hay pellets and the mixed ration, respectively.

Introduction

Field reports and research data indicate that spring-born beef calves reared on bermudagrass pasture frequently wean at lighter weights than calves grown on native-grass pastures. It has been theorized that part of the reason for lighter weaning weights is reduced forage intake during the latter part of the summer when forage quality declines. A decrease in forage consumption would result in reduced total energy intake since the calf depends upon pasture as a source of nutrients and energy to a greater degree with increasing age and size.

The three non-genetic means of increasing calf gains and weaning weights would be to increase milk consumption, forage consumption, or provide supplemental feed in order to increase energy and nutrient intake. Although it is possible to improve forage quality through management practices, it would be difficult to bring about sufficient change in forage quality to promote increases in forage digestible energy intake suf-

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ficient to foster significant improvement in calf-gain. Likewise, increased milk production by the dam sufficient to cause appreciable changes in calf gains would require supplemental feeding of the cow herd, which is not economically feasible. Hence, creep-feeding in some manner appears to be the most logical and simplest means of increasing the energy and nutrient intake by the nursing-grazing calf.

Creep-feeding studies have consistantly shown an increase in weaning weight but frequently have failed to show an economic advantage due to the cost and rather inefficient use of creep-feeds. Oklahoma studies with nursing calves grazing native grass pastures have shown that alfalfa hay or pelleted alfalfa hay is comparable to mixed grain rations as creep-feeds in increasing calf gains. Furthermore, alfalfa has been a more profitable creep-feed than single grains or grain mixtures.

The purpose of this study was to determine the growth promoting effectiveness and economic feasibility of a wide variety of types of creep-feeds for spring-born nursing beef calves grazing a pure stand of Midland Bermudagrass.

Materials and Methods

Sixty-eight spring-born calves from Hereford, Angus x Hereford, and Angus x Holstein cows were divided into four groups as equally as possible on the basis of breed of dam, sex of calf, and age of calf. The four groups of calves were assigned to the following treatments: Lot 1-control (no creep-feed); Lot 2-sudangrass creep-pasture; Lot 3-pelleted alfalfa hay; and Lot 4-high-protein, high-energy mixed ration. Since bermudagrass quality remains rather good until July and since calves do not begin to consume pasture or dry feed to an appreciable extent until they are three to four months of age, creep-feeding was not begun until mid-summer. Initial shrunk weights of calves were taken on July 21, 1970 following approximately a two-week period of adjustment to the respective treatments. Calves were weighed at approximately 28-day intervals and remained on the four treatments until weaning (83 days).

In Lot 2, approximately two acres of Piper Sudangrass was seeded adjacent to three of the bermudagrass pastures approximately 30 days prior to the start of the adjustment period. The lower wire of the fence separating the sudangrass and bermudagrass pastures was raised to allow calves to graze the sudangrass at will while cows were kept out. One-half of the creep-pasture was alternately mowed at alternately intervals to allow for continuous availability of new growth. Due to lack of rain during the latter part of the summer, the sudangrass lasted for only about 45 days after initial weights were taken. In lot 3, good quality alfalfa hay was ground and made into 3/8 inch pellets and fed free-choice in a self-feeder.

Seven percent molasses was added to reduce dustiness and enhance the pelleting process. A high-protein, high-energy mixed ration was fed to lot 4 free-choice in a self-feeder. The composition of the ration is shown in Table 1.

Cows and calves in the four treatment groups were rotated at weekly intervals among seven bermudagrass pastures in order to minimize pasture effect. Cows and calves assigned to lot 2 were restricted in rotation to the three pastures adjacent to the sudangrass creep-pasture. These pastures plus four others were used in the rotational scheme for lots 1, 3 and 4. Bermudagrass pastures were fertilized with 50 lb. each of P_2O_5 and K_2O per acre in May, plus 150 lb. of nitrogen per acre, in the form of ammonium nitrate, applied in three equal applications in May, July and August. A mineral mixture composed of two parts trace mineralized salt and one part dicalcium phosphate was available free-choice to cows and calves in all lots.

Table 1. Composition of Creep Ration Fed to Lot 4

Ingredient	% of Ration
Rolled milo	22
Rolled oats	22
Rolled corn	22
Soybean meal	20
Dehydrated alfalfa meal	6
Molasses	7
T. M. salt	0
Dikal	0
Vit. A (6,500 I.U./lb)	
Aureomycin (1 lb. Aurofac-40/ton)	

Results and Discussion

Calf weights, gains and feed consumption data are shown in Table 2. The control group (lot 1) had the lowest average daily gains at all intervals and the lowest weaning weights. Average weaning weights in lots 2, 3, and 4 were 35, 44, and 61 pounds heavier, respectively, than the average of lot 1. Calves in lot 4 were decidedly fatter at weaning than those in the other lots. It should be pointed out that average daily gains in lot 2 (sudangrass creep-pasture) ranked second to those in lot 4 (mixed ration) through the first 54 days of the study. As pointed out previously, sudangrass forage was good for about 45 days but growth stopped due to lack of rain. Thus, weaning weights in that lot would likely have been higher if the creep-pasture had lasted for the entire study.

Table 2. Calf Weights and Creep-Feed Consumption

Lot No.	1	2	3	4
Treatment	Control	Sudangrass[1]	Pel. Alf.	Mixed[2] Ration
No. calves/lot	16	17	17	18
Initial wt. (lb.)	310	314	317	309
Ave. weaning wt. (lb.)	437	472	481	498
Advantage over Lot 1 (lb.)	--	35	44	61
Wn. wt. as % of control	100.0	108.0	110.1	114.0
Ave. daily Gain (lb.):				
28 days	1.86	2.43	2.11	2.64
54 days	1.81	2.30	2.24	2.63
83 days	1.53	1.90	1.98	2.28
Creep-feed (lb.):				
Total/calf	--	No measure	423	573
Feed/calf/day	--	No measure	5.1	6.9
Feed/added lb. gain	--	No measure	9.6	9.4

[1] Sudangrass creep-pasture lasted only about 45 days.
[2] Mixed ration formula shown in Table 1.

Calves in lot 3 consumed less total creep-feed than those in lot 4, especially during the first 28-day period, indicating that alfalfa pellets were less palatable than the mixed ration. The calves slowly adapted to the alfalfa pellets, resulting in increased gains between the 28 and 54-day weights. Feed efficiency expressed as feed required for each additional pound of gain above that of the control lot was 9.6 and 9.4 for lots 3 and 4, respectively. Hence, alfalfa pellets were used about as efficiently as the mixed ration. Consumption of creep-pasture in lot 2 was not measured, therefore efficiency of pasture conversion can not be calculated.

During the early part of the study when the sudangrass was growing rapidly, calves grazed the creep-pasture rather heavily. Forage quality was controlled to a degree by mowing half of the pasture when it got too rank, thus providing both new and older growth. The two-acre area provided a sufficient amount of creep-pasture for the 17 calves as long as soil moisture was adequate. Had the sudangrass plot been irrigated there would have been abundant creep-pasture to weaning time.

Economic aspects of the study are shown in Table 3. Cost of sudangrass pasture was estimated to be $12.50 per acre and the alfalfa pellets estimated to cost $50.00/ton, including processing. The ration fed to lot 4 was mixed by a commercial mill and the actual cost was $80.00/ton. The price of this mixture could probably be reduced considerably if mixed on the farm or if purchased in larger quantities, thus making it more economically practical.

Total creep costs per calf were $1.47, $10.50, and $23.03 for lots 2, 3, and 4, respectively. The net advantage per calf due to creep-feeding was $10.78, $4.90, and -$1.68 for lots 2, 3, and 4, respectively, using the prices

Table 3. Economic Comparisons

Lot No.	1	2	3	4
Treatment	Control	Sudangrass[1]	Pel. Alf.	Mixed[2] Ration
Cost of creep ($)	--	12.50/A.	50.00/T.	80.00/T.
Creep cost/calf ($)	--	1.47	10.50	23.03
Cost/added lb. (¢)	--	4.2	28.1	37.0
Ave. calf value[3] ($)	152.95	165.20	168.35	174.30
Calf minus creep ($)	152.95	163.73	157.85	151.27
Net due to creep ($)	--	10.78	4.90	—1.68
Breakeven creep cost[3] ($)	--	104.12/A.	62.20/T.	75.60/T.

[1] Sudangrass creep-pasture lasted only about 45 days.
[2] Mixed ration formula shown in Table 1.
[3] Based on 35¢/lb. for weaned calves.

described and assuming a sale price of 35¢ per pound for all calves. This assumes no price reduction for heavier, fatter calves in lot 4. If there were a reduction in price per pound the mixed ration would have been even less profitable.

Since cost of feed is so highly variable, the breakeven cost was computed based on a sale price of 35¢/lb. of calves on all treatments. Note that the creep-pasture would be the one from which a profit could most easily be realized.

Results of this study indicate that gains and weaning weights of nursing calves grazing bermudagrass pasture during the growing season can be increased by widely different types of creep-feeds. The greatest increase in weights was obtained with the high-protein, high-energy mixed ration but the cost of the mixture makes its economic feasibility questionable. Pelleted high quality alfalfa hay shows promise both from the standpoint of increasing calf gains and net returns. From an economic standpoint creep-pastures such as sudangrass or other high quality warm season annuals appear to show considerable promise.

Success of this type of creep depends largely upon the adequacy of rainfall and/or the availability of irrigation water. The advantage in calf gains of lot 2 over lot 1 strongly suggests that during the latter part of the nursing period calf gains are influenced to a great degree by the quality of forage available, and that bermudagrass quality during this period of time is too low to permit maximum gain.