SUPPLEMENTAL FEEDING OF COWS AND CALVES ON LATE FALL PASTURE

Douglas G. Landblom and James L. Nelson

Supplemental or "creep" feeding is generally recommended for calves nursing cows that are grazing short or drought stricken pastures, or where extra bloom is desired. Numerous investigations of creep feeding conducted throughout the United States, as summarized by Kirkeide and Johnson (1979), show that an increase in weaning weight of from 30 to 60 pounds can be expected when calves are creep fed from mid-season to weaning.

The extra energy available from creep feeding results in additional gain because the average beef cow does not produce enough milk to promote maximum gains in calves once they reach approximately 150 pounds of body weight. Butson and co-workers (1977) evaluated the lactation performance of beef cows and found that during the grazing period from June to September, daily milk production per cow averages only about 13 pounds, which should satisfy the nutrient requirements for calves weighing 100-150 pounds. Heavier calves, therefore, must obtain the rest of their nutrients from grazing.

Peak milk production among beef cows occurs approximately two months after calving and then starts to decline. In the Northern Great Plains, declining milk production closely parallels declining forage quality, as pastures and rangelands mature.

During seasons when adequate grazing exists, long-term creep feeding has not been recommended by the Dickinson Branch Station because creep feeding minimizes weight differences among calves at weaning, masking the milking ability of cows and making sound selection based on performance all but impossible. Most of the additional gain from creep feeding is deposited as fat, and overfattening of replacement heifers has been shown to interfere with milking ability and to lower lifetime productivity. Following weaning, non-creep fed calves make compensatory gain and tend to catch up with calves that were creep fed; and, in many years, the ratio between calf selling price and feed costs is unfavorable, resulting in a net loss for creep feeding.

While summer long creep feeding may not be advantageous because of the reasons just cited, **research with short-term creep feeding on mature late fall pasture has not been fully investigated.**

A request for information on the subject directed to the Current Research Information on the subject directed to the Current Research Information System data base, which includes projects from 56 state agricultural experiment stations, 30 forestry schools and three USDA-SEA research agencies, revealed no reported information available on this practice under conditions normal to the Northern Great Plains.

At the request of the North Dakota Hereford Association, a two-phase experiment was designed to evaluate either creep feeding calves or supplementation of cows grazing on late fall pastures. The objective in Phase I was to determine the effects of short-term creep feeding on calf gain when compared to the supplemental feeding of cows instead of their calves. Cow and calf gains, time required for adaptation to the creep ration, and overall economics were monitored.

Phase II evaluates the effect of either form of supplementation on late fall pasture with respect to reducing stress on calves at weaning, effect of disease frequency associated with weaning, and effect of creep feeding on adaptation of calves to weaning rations.

In Phase I, 60 uniform Hereford cows and their calves were randomly allotted into three pasture groups of 20 pairs each. The calves in each group consisted of equal numbers of Hereford and Angus X Hereford crossbred bull and heifer calves.

Each experimental group grazed on approximately 40 acres of reseeded native pastures in excellent condition with easy and uniform access to water. All calves were vaccinated for blackleg, malignant edema, hemorrhagic septicemia and enterotoxemia when allotted.

Group one served as the control and received no supplemental feed other than a salt and di-calcium phosphate mineral mixture, which was made available to all groups free choice.

Group two was the creep feeding treatment. Calves had access to a wooden creep feeder located within 150 feet of their water source. The creep feed was composed of 60% dry rolled barley, 35% rolled oats and 5% liquid molasses.

Cows in group three received a supplemental feeding of 6 pounds ground oats per head on a daily basis. Bunk space was limited so that competition among cows would not allow calves to eat grain.

Advanced pasture maturity common to North Dakota ranges occurs during the period from August to October, and nursing calves grazing these ranges are normally weaned from their mothers near the end of the period. To coincide with weaning and normal pasture deterioration, a 40-day supplementation period prior to weaning was selected.

Gains, feed consumption and economics are sum-

Landblom is assistant animal husbandman and Nelson is animal husbandman, Dickinson Branch Station.

marized in table 1.

Phase II started immediately after weaning, when the calves were allotted to feedlot pens. The calves were separated by sex, but remained in the same pasture groups. Bulls from each treatment were all fed and handled alike to evaluate any carryover effects of late fall pasture supplementation on weaning stress, weight gains, and disease frequency. They were self-fed a complete mixed ration of 20% oats, 70.5% chopped hay, 0.5% di-calcium phosphate, 2% trace mineral salt and 7% molasses.

The heifer calves were used to evaluate two feeding management systems in dry lot after weaning. Heifers from control cows and cows supplemented with oats on pasture were exposed to self-feeders containing a mixed ration of 20% oats, 77.5% chopped hay, 0.5% di-calcium phosphate and 2% salt. Those heifer calves that had been creep fed on pasture were continued on the same creep ration in dry lot. This ration was 60% barley, 35% oats and 5% molasses. In addition, these heifers were also self-fed chopped mixed hay in a separate feeder.

Two-year average weaning gains, feed consumption and economics for the heifer calves are shown in table 2. Results for the bull calves are summarized in table 3.

Table 1. Two-year average gains, feed consumption and economics of cow and calf supplementation on late fall pasture.

	Group I Control calves	Group II Calves creep fed	Group III Calves from supplemented cows
Days fed	40	40	40
Start Wt., lbs.			
Cows	1079	1104	1079
Calves	377	371	382
Final Wt., lbs.			
Cows	1135	1131	1119
Calves	457	450	464
Gain, lbs.			
Cows	56	27	40
Calves	80	79	82
Avg. daily gain, lbs.			
Cows	1.40	.67	1.0
Calves	2.0	1.97	2.05
Supplemental feed/hd.		lbs.	
Cows — oats	—	—	243
Calves — creep feed	—	155	—
Feed/hd/day	—	3.88	6.1
Total feed cost, $[1]	—	108.03	160.59
Feed cost/calf, $		5.40	8.03

[1]*Average price paid for ingredients was 90¢/bushel – oats, $1.35/bushel – barley, 6.5¢/lb. – molasses and $10/ton processing.*

Table 2. Two-year average weaning gains, feed consumption and economics for heifer calves fed two ration types in Phase II.

	Group I Control calves	Group II Calves creep fed	Group III Calves from supplemented cows
Total No. heifers	19	18	19
Start Wt., lbs.	450	422	444
Final Wt., lbs.	483	479	478
Gain, lbs.	33	57	34
Days fed	22	22	22
Avg. daily gain, lbs.	1.50	2.59	1.55
Feed summary:			
Feed/hd., lbs.	291	305	288
Feed/hd/day, lbs.	13	14	13
Creep feed, lbs.	—	10.4	—
Chopped hay, lbs.	—	3.5	—
Economics			
Feed cost/cwt., $	2.66	3.19	2.66
Feed cost/cwt. grain, $	26.78	17.05	22.84
Feed cost/hd., $	7.73	9.73	7.66

Table 3. Two-year average weaning gains, feed consumption, and economics for bulls fed a complete mixed ration.

	Group I Control calves	Group II Calves creep fed	Group III Calves from supplemented cows
Total No. bulls	21	21	21
Start Wt., lbs.	464	476	483
Final Wt., lbs.	503	530	526
Gain, lbs.	39	54	43
Days fed	22	22	22
Avg. daily gain, lbs.	1.77	2.45	1.95
Feed summary:			
Feed/hd., lbs.	318	367	341
Feed/hd./day, lbs.	14.5	16.7	15.5
Economics:			
Feed cost/cwt., $	2.95	2.84	2.92
Feed cost/cwt., gain, $	26.21	19.26	24.61
Feed cost/hd., $	9.42	10.50	10.03

Summary:

In Phase I two-year average daily gains and total gain for calves was similar among all treatments. However, yearly variation was large because in 1978, the first year of the study, grazing conditions and forage production were substantially better than in 1979. Due to dry range conditions in 1979, fall pasture grazing started approximately 30 days sooner than in 1978. Gains for cows in 1978 ranged from 1.52 to 2.90 pounds per day compared to a range of minus .17 to plus .22 pounds per day in 1979. Calf gains averaged from 2.15 to 2.37 pounds per day in 1978 and 1.68 to 2.07 pounds per day in 1979.

Results to date indicate that during years of good grass production, net returns from supplementing cows, or creep feeding calves would be negligible. However, the carryover effect on calves following weaning makes

short-term creep feeding on fall pasture very desirable.

Upon weaning, which was the beginning of the second phase, the calves were separated by sex into two post-weaning trials. Bull calves were used to evaluate the effects of supplementation, while the heifer calves were used to evaluate two types of weaning rations following late fall supplementation.

In both experiments, bull and heifer calves that had been creep fed on pasture gained the fastest and were the most efficient. Feed consumption in the feedlot after weaning averaged 16.7 pounds per day for creep fed calves as compared to 15.5 pounds per day for bulls that had nursed supplemented cows, and 14.5 pounds for the control.

Short-term creep feeding prior to weaning resulted in increased feed consumption and daily gains, which indicate that the transition from a pasture environment and weaning to a feedlot environment was accomplished with substantially less stress by creep fed calves.

Heifer calves used to evaluate two types of weaning rations were fed either a high energy creep ration or a high roughage complete mixed ration. Heifers from the control and supplemented cow groups were self-fed the high roughage/low energy ration, and those heifers that had been creep fed on pasture received the same high energy creep ration free choice in drylot.

Using the same creep feeder and high energy creep ration fed under pasture conditions resulted in significantly faster gains, greater feed consumption and easier acclimation to the feedlot environment. In 22 days the creep fed calves gained 24 pounds more than calves from supplemented cows or the control.

Caution should be used when putting fresh weaned calves on a high energy ration such as the one used in this experiment. This ration is NOT recommended for calves that have not been exposed to the creep ration while nursing their dams on pasture. It is also recommended that any calves that are to be creep fed should be vaccinated for blackleg, malignant edema, hemorrhagic septicemia and enterotoxemia.

It is also important to note that high energy rations, typical of the creep ration used in this study, should only be used during a short 3-week pre-conditioning period following weaning. Longer feeding periods with heifers may result in undesirable fat deposits in the udder, which can directly affect milking ability, resulting in a shortened productive life.

Calfhood weaning diseases were very minimal in all of the treatments, and no advantage was measured for any of the treatments in terms of disease management.

LITERATURE CITED

[1]Butson, S. L., R. E. Lind and R. T. Berg. 1977. **Lactation performance of beef, dairy and dairy-beef cows.** University of Alberta, 56th Annual Feeders' Day Report.

[2]Kirkeide, M. A. and L. Johnson. 1979. **Creep feeding calves.** North Dakota State University Extension Circular A-332.