

# NUTRITION — COW-CALF AND STOCKER

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## Effects of Early Weaning Calves From First Calf Heifers on Calf and Heifer Performance

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### Story in Brief

Calves from 31 first calf 2-yr-old Hereford heifers in thin condition were weaned at 6 to 8 weeks of age. Thirty additional heifers were assigned to raise their calves to normal weaning age (7 months). One-half of the early weaned calves remained in drylot to normal weaning age and were fed complete mixed rations. At 4½ months of age, one-half of the early weaned calves were moved from drylot to a native pasture with the drylot ration available as creep feed. Early weaning improved heifer conception rates from 59 to 97 percent ( $P < .05$ ). Heifers with early weaned calves gained more ( $P < .05$ ) weight from calving to breeding, during the breeding season and weighed 87 lb more in the fall than heifers that suckled calves. Calves reared in drylot weaned at about the same weight as calves raised by their dams. Calves fed creep on range the last 2 months of the study gained less ( $P < .05$ ) than calves in drylot, but consumed 40 percent less feed.

### Introduction

It has been established that suckling delays the onset of estrus in beef cows. The frequency and intensity of suckling may both be important. Several studies have shown that weaning of calves at 40 to 50 days of age increases the number of cows cycling and induces estrus among cows too thin to breed while suckling calves.

The major problem with using early weaning as a tool for improving rebreeding rates in poorly fed cows has been management of the early weaned calf. The benefits to the cow from early weaning can only be realized if producers can successfully and economically manage early weaned calves with minimal labor and facilities.

The following study was conducted at the Range Cow Research Center at Oklahoma State University to evaluate two management schemes for raising calves weaned at 6 to 8 weeks of age from first calf heifers.

### Experimental Procedure

Sixty-three Angus x Hereford crossbred calves and their first calf Hereford dams were assigned to two weaning treatments. As calves were born, they were either assigned to remain with their dam until weaning in early October or were assigned to

be early weaned. All heifers were weighed within 1 week after calving. Calves were born between February 18 and April 17, 1979, and were weaned once every 2 weeks starting the day the oldest calf was 8 weeks old. Thus, all calves were weaned between 6 and 8 weeks of age. At early weaning, calves were weighed, vaccinated for blackleg - malignant edema, castrated if appropriate and put in a 20' x 30' pen adjacent to a barn to provide shelter. Feed and water were readily available in the pen. Two older (4 to 5 mo old) calves accustomed to eating were put with the early weaned calves for the first week after weaning. A high-energy, high-protein starter ration (Table 1) was fed during the week calves were in the weaning pen. Following the first week, calves were put in a 100' x 150' drylot pen with a portable creep feeder. A slightly lower energy ration, Ration II (Table 1) was fed in the self feeder.

All heifers were exposed to Angus bulls from May 29 to July 31. Heifers suckling calves and heifers with weaned calves were separated for approximately one month after early weaning to eliminate the possibility of calves suckling heifers with weaned calves. Heifers grazed native range until June and were pastured on midland bermuda for the remainder of the summer. Pregnancy was determined by rectal palpation in mid-October.

The early weaned calves were divided into two groups on July 31, when the calves averaged about 4½ months of age. One group remained in drylot to normal weaning age while the other group was placed on native pasture with creep feed available. The same ration was fed to both groups.

All calves (normal reared, drylot reared and drylot-range reared) were weaned on October 11, 1979, at approximately 7 months of age.

## Results and Discussion

No sickness was encountered during the weaning period or at any time during the summer. A few calves were treated for pinkeye but this problem was not related to early weaning. The use of the two older "leader" calves during the first week after weaning appeared to be highly beneficial. Orphan calves are frightened, confused and unaccustomed to eating from a trough or drinking from a waterer or tank. The newly weaned calves followed the older calves and drank and ate whenever the older calves did. The amount of bawling was less than anticipated and may have been reduced due to the presence of the older calves.

It is extremely critical that newly weaned calves begin to eat and drink immediately. Since the stomach capacity of a 6-week-old calf is small, the starter ration must be high in protein and digestible energy. These calves are essentially monogastrics at this young age. Hay was not offered to the calves since it would have reduced intake of the concentrate diet.

The only serious problem encountered during the experiment was the occurrence of founder in two drylot calves in late August. Considerable separation of ration ingredients was encountered with Ration II and as a result these calves probably consumed too large a quantity of the fines. The calves were very adept at sorting ingredients and it is desirable that rations either be pelleted or formulated with sufficient molasses to prevent sorting. If alfalfa pellets are used, they should be ground.

The ration for all early weaned calves was changed (Ration III, Table 1) to include a higher roughage level and lower protein on September 4.

It must be remembered that early weaned calves are fed the opposite of feedlot cattle; early weaned calves must be started on high concentrate and switched to higher roughage levels as their rumen capacity increases with size. The protein level in the

ration can be decreased as feed intake increases with age. The work to date has demonstrated that beef calves can be successfully weaned at 6 to 8 weeks of age with minimal labor and facilities.

Heifer weights (Table 2) taken in November prior to spring calving show that these heifers were slightly underweight before the winter. The heifers weighed less than 700 lb (1 week) after calving in the spring. Heifers which did not have their calves early weaned lost 16 lb from calving to the beginning of the breeding season and were in poor condition at breeding, ranking about 3 or 4 on a scale of 1 = very thin to 9 = very fat.

Heifers with early weaned calves gained 34 lb from calving to the beginning of the breeding season compared to a 16-lb weight loss for heifers nursing calves. Heifers with early weaned calves had gained an average of 107 lb from calving to the end of breeding compared to only 32 lb for heifers suckling calves. Even with the excellent summer forage conditions prevailing during this study, heifers suckling calves were not able to

**Table 1. Rations used in early weaning studies.**

Ingredient (%)	Starter	Ration II	Ration III
Rolled corn	50	22.5	45
Oats	15	50.0	
Alfalfa, dehy	5	5	5
Soybean meal	22.5	15	12
Cottonseed hulls			33.5
Molasses	3.0	3.0	3
Dical	2.5	2.5	
Limestone	1.0	1.0	1
KC1			.5
TM salt	1.0	1.0	
Vit A (30,000 IU/g)	1 lb/ton	½ lb/ton	
Aureomycin (CTC 50)	2 lb/ton	1 lb/ton	

**Table 2. Weight changes and conception rates of heifers with normal or early weaned calves.**

	Suckled	Early Weaned
Heifer weights 11/15/78	738	726
After calving, Feb, Mar, Apr, 1979	698	680
Weight gains changes		
calving to breeding	-16 <sup>a</sup>	34 <sup>b</sup>
during breeding period		
(5/29/79-7/31/79)	48 <sup>a</sup>	73 <sup>b</sup>
calving to weaning (10/11/79)	90 <sup>a</sup>	195 <sup>b</sup>
Weight at weaning	788	875
Conception rates		
conceived/exposed	19/32	30/31
% pregnant	59.4 <sup>a</sup>	96.8 <sup>b</sup>

<sup>ab</sup>Means on the same line with different superscript letters differ ( $P < .05$ ).

overcome poor winter nutrition and lactate at the same time. Since heifers that raised calves to weaning weighed 87 lb less in October than heifers with early weaned calves, additional feed will be needed during the coming winter to insure adequate rebreeding following their second calving.

Only 59 percent of heifers that raised calves rebred. This low conception rate was predicted by the poor condition of the heifers after calving. Early weaning improved rebreeding by 38 percent. The decreased nutrient requirements of the non-lactating heifer cannot explain this much improvement. It has been demonstrated that the cessation of suckling increases the output of pituitary and/or ovarian hormones that regulate heat in cattle.

Weaning weights (Table 3) for suckled calves and calves raised in drylot were almost identical (373 vs 374 lb). Calves moved to pasture and creep fed after 4½ months of age were about 40 lb lighter, illustrating that calves of this age must have either a complete mixed ration or milk to obtain adequate gains. Total feed consumption was reduced about 40 percent by putting the calves on pasture.

Feed conversions for early weaned calves were very good. This would be expected since young calves are gaining mostly muscle and little fat. Feed costs for the early weaned calves were \$82.19/head for drylot rearing and \$64.49 for the drylot pasture system. Considering the amount of supplemental feed needed to have achieved a 90 percent conception rate in these heifers when suckling calves, the reduced feed requirements of the heifers with early weaned calves during the next winter due to their better condition in the fall and the costs of carrying open heifers for a year, the feed costs for the early weaned calves are probably reasonable for most producers.

Early weaning is not a recommended standard practice for all producers or for all first calf heifers. However, early weaning can obviously allow cattlemen to overcome what could otherwise be a breeding disaster. Early weaning could also have applications during drought when it might be more economical to directly feed an early weaned calf and reduce feed to the cow. The potential for early weaning to increase rebreeding performance of late calving mature cows will be studied.

**Table 3. Weight gains, weaning weights and feed efficiencies of normal and early weaned calves.**

	Suckled	Drylot	Drylot-Pasture
Number of calves	30	16	13 <sup>a</sup>
Weight at early weaning, lb		124	126
Gain from 7/31/79-10/11/79		106 <sup>b</sup>	62 <sup>c</sup>
Weight at normal weaning age	373 <sup>b</sup>	374 <sup>b</sup>	330 <sup>c</sup>
Feed conversion (as fed basis)		4.67	4.78
Feed cost/calf <sup>d</sup>		\$82.19	\$69.49
Feed consumption (lb/hd/day)			
ration 1		2.5	—
ration 2		5.9	4.3
ration 3		11.5	6.5

<sup>a</sup>Data from two calves were omitted. One calf was ill from birth and one calf escaped from the pasture and was removed from the study.

<sup>b,c</sup>Means on the same line with different superscript letters differ (P<.05).

<sup>d</sup>Based on October 10, 1979 prices. Ration 1 = \$160/ton, Ration 2 = \$150/ton, Ration 3 = \$135/ton.