

Bulletin B-610

CREEP-FEEDING FALL CALVES

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May, 1963

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This bulletin reports results of three experiments to determine feasible and profitable methods of creep-feeding fall calves.

Nelson *et al.* (1955) found that creep-feeding did not increase the profits of spring calves from mature cows on good grass sold as feeders. They found, however, that creep-feeding would increase profits from spring-dropped calves to be sold for slaughter.

It was assumed that creep-feeding would be of greater value to fall-dropped calves nursing cows on dry, weathered grass for several months, as compared to spring calves with their dams on lush pastures during most of the suckling period.

Procedures

Experiment I

Experiment I was conducted for four years with mature cows fed on a low and high level of supplemental winter feed. The fall calves of the cows in this experiment were creep-fed from January to weaning in July.

In October, 1954, 68 grade Hereford cows were weighed and divided into four lots of 17 head each. The number of cows per lot varied from 17 to 20 in each of the four years. All cattle added during the experiment were of similar type and breeding as to those in the first trial. All cows had produced at least one calf before being placed on test.

Research reported herein was done under Oklahoma Station Project Numbers 855 and 1045.

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Purebred Hereford bulls were placed with the cows in the latter part of December or early January, making the first calves to be born in early October. Cattle in all three experiments grazed native grass pastures (Bluestem and associated grasses) at the Lake Carl Blackwell experimental range west of Stillwater. Cows in experiment 1 were fed supplemental winter feed as follows:

Lot 1. 1.5 pounds of pelleted cottonseed meal; calves not creep-fed.

Lot 2. 1.5 pounds of pelleted cottonseed meal; calves creep-fed.

Lot 3. 2.5 pounds of pelleted cottonseed meal and 3 pounds of grain; calves not creep-fed.

Lot 4. 2.5 pounds of pelleted cottonseed meal and 3 pounds of grain; calves creep-fed.

Supplemental feed allowances for the cows remained the same throughout the experiment. Yellow corn was the grain fed during the first two winter seasons in lots 3 and 4. Ground milo replaced corn in the last two winters and cottonseed meal and the milo were pelleted for feeding convenience. Supplements were fed every other day, twice the daily allowances at each feeding. A mixture of two parts salt and one part steamed bone meal was available at all times. The average winter feeding period for the cows was from mid-October until mid-April. Each lot of cows was moved to a different pasture each year.

Calves in lots 2 and 4 were started on creep-feed in mid-December. The creep-feed mixture during the first season consisted of 50 percent coarsely cracked corn, 30 percent whole oats, 10 percent cottonseed meal, and 10 percent cane molasses. In later seasons corn was replaced with 55 percent rolled milo and molasses reduced to 5 percent. Creep-feeding was continued until the calves were weaned and sold in early July.

Experiment II

Experiment II was designed to compare (1) non-creep-fed and creep-fed calves whose dams were fed on a low level of winter feed, and (2) creep-fed calves whose dams were fed on a low level winter ration vs. non-creeped calves whose dams were fed on a high winter feed level.

The experiment was conducted for two years using two-year-old heifers during the first year and the same heifers as three-years-olds during the second year. On September 2, 1958, 46 heifers were divided into three lots on the basis of their weights. Heifers in lots 1 and 2 were fed on a low level and those in lots 3 on a high level of supplemental feed. Calves in lot 1 were creep-fed and calves in 2 and 3 were not creep-fed.

The heifers were bred to calve in late September, October and November of 1958 at about 30 months of age.

Heifers in lots 1 and 2 were fed so that they lost about 30 percent of their fall body weight during the winter. Those in lot 3 were fed to lose about 20 percent, including calving loss. Lots 1 and 2 were fed 1.39 pounds of pelleted cottonseed meal per head daily. The lot 3 heifers were fed 6.9 pounds per head daily of a pelleted mixture consisting of 35 percent cottonseed meal and 65 percent ground milo from November 4, 1958, until February 13, 1959. At this time the daily feed was increased to 7.81 pounds in order to obtain the desired weight differences between lots. Supplemental winter feeding was discontinued on April 17, 1959. The cows were fed every other day, twice the daily allowance at each feeding.

Calves in lot 1 were started on creep-feed in mid-January. The mixture consisted of 55 percent rolled milo, 30 percent whole oats, 10 percent cottonseed meal and 5 percent molasses.

During the second year, when the cows were raising their second calves, the amount of pelleted cottonseed meal fed to lots 1 and 2 was increased to $2\frac{1}{2}$ pounds per head daily. The supplemental feed for lot 3 was 6.3 pounds per head daily of a pelleted mixture consisting of 40 percent cottonseed meal and 60 percent ground milo. The calves in lot 1 were started on creep-feed on December 31, 1959.

Experiment III

This experiment involved a three-year study to determine the value of creep-feeding fall calves to weaning in July vs. only until spring, when adequate green grass was available. Different creep-feeds were also studied.

Calves born in late September, October and November were divided into respective treatment groups in late December of each year as follows.

Lot 1. Not creep-fed.

Lot 2. Creep-fed a concentrate mixture until weaning.

Lot 3. Creep-fed a concentrate mixture until spring.

Lot 4. Creep-fed a pelleted concentrate mixture until spring.

Lot 5. Creep-fed alfalfa hay until spring.

Lot 6. Creep-fed pelleted alfalfa hay until spring.

The concentrate mixture consisted of 55 percent steam rolled milo, 30 percent whole oats, 10 percent cottonseed meal and 5 percent molasses. Creep-feed in lot 4 was the same mixture except that it was ground and pelleted (5/16 inch diameter pellets). Average quality alfalfa hay was fed in an open bunk to calves in lot 5. Pelleted alfalfa fed to calves in lot 6 were 5/16-inch diameter and the hay was finely ground before pelleting.

Cows used in the experiment were high-quality, grade Herefords which had previously produced at least one calf. Calves were allotted to the treatments according to their age and sex and age of the cow. In some instances, calves were removed from the experiment because of death of the cow or sickness of the calf. Treatment groups were placed in different pastures each year. Bulls were rotated among the pastures every two weeks to minimize genetic effects in subsequent years.

Cows were fed an average of 2.5 pounds of pelleted cottonseed meal per head daily from mid-October to about May 1. All cattle had access to a mineral mixture of two pounds salt and one pound steamed bone meal.

Cow and calf weights were recorded at monthly intervals. Calves were weaned in July and sold as feeders at the Oklahoma City stockyards. In all instances, value of the calves as feeders was greater than for slaughter. Financial statements in the tables are calculated using feeder calf prices and feed costs during the years of the tests.

Results

Experiment I

Table 1 shows that creep-feeding decreased profits at both levels of wintering. The average decrease in returns was \$2.33 on the low level and \$11.29 on the high level.

Creep-feeding was profitable in only one instance during four years of tests (low level, 1957-58). A three-year average loss of \$12.07 due to creep-feeding on the low level was reduced to a four-year average loss of \$2.33. Therefore, yearly variations and other aspects of creep-feeding should be considered before deciding whether or not to creep-feed fall-dropped calves.

Within each year all lots of calves sold for about the same price per 100 pounds. All steers sold as feeders. In most cases, feeder prices for heifers were considerably higher than slaughter prices. However, in

some instances the slaughter price of creep-fed heifers was equal to, or higher than, the feeder price.

The increased value of calves due to high level of wintering the cows was not equal to the increased cost of supplemental feed. Thus, the high level of winter feed proved to be unprofitable. Profits were decreased \$7.50 for the non-creep-fed calves and \$16.46 for the creep-fed calves. It was more profitable to creep-feed calves from low level cows (lot 2) than to feed a high level of supplemental feed to the cows and not creep-feed (lot 3).

In mid-April, when supplemental feeding of the cows was stopped, creep-feeding had increased gains by 61 pounds and 51 pounds per calf from low and high level dams, respectively. Thus, a large percentage (70 and 98 percent) of the difference in weights resulting from creep-feeding until weaning in July, was present by mid-April. Yet, at this time, only about one-third of the total creep-feed had been consumed.

Creep-feeding consistently resulted in the production of fleshier calves, as was expected. Creep-fed calves averaged 70 pounds heavier than non-creep-fed calves. High level feeding of the cows increased calf weights an average of 30 pounds.

Experiment II

Creep-fed calves in lot 1 averaged 93 pounds more at weaning than non-creep-fed calves in lot 2 (Table 2). Creep-fed calves from two-year-old cows averaged 111 pounds more than non-creep-fed calves. Increased returns from creep-fed calves were \$18 per head on the first calves when the heifers were two-year-olds, but suffered a \$4 loss on the second calf crop when the cows were three-year-olds. Thus, the two-year average selling value of the calf minus feed costs for both cow and calf was about \$7 per head in favor of creep-feeding.

In light of the above, it might be profitable to creep-feed calves from first-calf heifers, which do not produce as much milk as more mature three-year-olds.

Calves were weaned in early July and sold at the Oklahoma City livestock market. All calves sold as feeders in both years and all lots happened to sell for the same price per 100 pounds. Prices in 1959 were \$38.50 and \$35 for steers and heifers, respectively. Prices in 1960 were \$27 and \$25.

Calves in lot 1, creep-fed and on low-level cows, weighed 38 pounds more at weaning than calves in lot 3, non-creep-fed and on high-level

cows. Total costs for feed in lot 1 were \$60.68 compared to \$53.26 in lot 3. Selling value of the calf minus feed cost was higher on lot 1 calves, therefore, making it more profitable to creep-feed the calves rather than to increase the winter feed of first-calf heifers. The reverse was true, however, when the cows produced their second calves.

Experiment III

Table 3 shows that creep-feeding only until spring was more profitable than creep-feeding until weaning. Calves which were creep-fed through weaning weighed an average of 34 pounds more than those which were creep-fed only until spring, but required an average of 547 pounds more feed per head. Both groups of calves sold at the same price per 100 pounds; therefore, calves which were creep-fed only until spring were nearly \$6 per head more profitable.

Creep-feeding alfalfa until spring proved to be a profitable practice, as shown by relatively high winter gains, good subsequent summer gains and low feed costs. Increased returns were about \$3 per head more than not creep-feeding and \$7 per head more than creep-feeding a mixture until weaning.

Calves preferred meal mixtures (rather than the same mixture pelleted) as shown in Table 3. Lot 4 calves consumed only 162 pounds per head of the pelleted mixture as opposed to 256 pounds of meal in lot 3. Hence there appears to be no advantage to pelleting a creep feed.

Alfalfa hay (lots 5 and 6) increased winter gains by 23 pounds when fed long and 34 pounds when fed as pellets. Grinding and pelleting, of course, increased the cost of the feed.

Summary

This study was conducted to determine if creep-feeding fall calves was profitable and, if so, what method of creep-feeding was most desirable.

Creep-feeding increased gains of fall calves from 50 to 100 pounds depending on the level of winter feeding, milk production and age of the cow. Calves ate an average of 875 pounds of creep-feed. In most years, both creep-fed and non-creep-fed calves sold at the same price per 100 pounds, although the creep-fed calves were fleshier.

Creep-feeding a concentrate mixture only until green grass was available in the spring (late April or May) increased gains an average of 48 pounds. However, non-creep-fed calves tended to recover by

gaining more until weaning. Creep-feed consumption to spring was 256 pounds per calf and the increased value of the calf was greater than the cost of the small amount of creep-feed.

Creep-feeding fall-dropped calves until spring, with either average quality alfalfa hay fed long or in pellets, proved to be the most profitable method of those studied. Calves consumed more pounds of the alfalfa pellets, but feed costs were higher due to the extra feed processing involved.

In one test, creep-feeding profitably increased the weaning weights of calves from first-calf heifers in a fall-calving system.

LITERATURE CITED

Nelson, A. B., Glen Bratcher, R. D. Humphrey and R. W. MacVicar. 1955. Creep-Feeding Spring Calves. Okla. Agr. Exp. Sta. Bul. B-462.

Table 1. Experiment I. Fall Calves from Mature Cows Fed on a Low and a High Level of Supplemental Winter Feed (4-Yr. Average).

Lot number Level of feeding cow	1	2	3	4
	1½ lb. CSM	1½ lb. CSM	2½ lb. CSM 3 lb. grain	2½ lb. CSM 3 lb. grain
Creep-feeding	None	Creep-fed	None	Creep-fed
Number of cows raising calves	69	62	69	69
Average weight per cow, lb.				
Initial (fall)	1080	1119	1098	1124
Winter change (198 days)	-245	-291	-225	-239
Change to weaning	-27	-45	-22	-21
Yearly change	20	18	28	31
Average weight per calf, lb.				
Birth ¹	76	76	77	76
Spring ²	261	322	293	344
Weaning ³	469	556	516	568
Average birth date of calves	Oct. 27	Nov. 6	Oct. 31	Oct. 29
Supplemental feed per head, lb.				
Cow				
Cottonseed meal	274	274	457	457
Grain			538	538
Calf (creep-feed)		884		872
Total feed cost per head, \$ ⁴				
Cow	33.07	33.07	53.21	53.21
Calf		25.10		24.76
Total	33.07	58.17	53.21	77.97
Selling value, \$				
Per 100 pounds				
Steers	24.32	24.84	24.66	24.88
Heifers	20.87	21.52	21.35	21.69
Per head ⁵	101.48	124.25	114.12	127.59
Selling value minus feed cost, \$	68.41	66.08	60.91	49.62

¹Corrected for sex by the addition of 3 lb. to the birth weight of each heifer.

²Corrected for sex by the addition of 18 lb. to the weight of each heifer after a 170-day age correction by interpolation.

³Corrected for age by adjusting all calves to a standard age of 260 days, and for sex by the addition of 43 lb. to the age-corrected weight of each heifer.

⁴Includes pasture cost.

⁵Based on an equal number of steers and heifers in each lot using the age-and sex-corrected weaning weights for the steers and this weight minus 43 lb. as the average weight of heifers.

Table 2. Experiment II. Fall Calves from Young Cows on Different Winter Feeding Levels (2-Yr. Average).

Lot number . . .	1	2	3
Cow feeding level . . .	Low	Low	High
Creep-feeding . . .	Yes	No	No
Number of cows raising calves	27	25	29
Average weight per cow, lb.			
Initial (fall)	1034	1012	990
Winter change (203 days)	-283	-299	-194
Change to weaning	-42	-59	-6
Yearly change	24	32	60
Average weight per calf, lb. ¹			
Birth	73	72	73
Spring	222	160	207
Weaning	413	320	375
Average birth date of calves	Oct. 21	Oct. 26	Nov. 3
Supplemental feed per head			
Cow			
Cottonseed meal	360	360	456
Milo			676
Calf (creep-feed)	944		
Total feed cost per head, \$			
Cow	36.30	36.30	53.26
Calf	24.38		
Total	60.68	36.30	53.26
Selling value per calf minus feed cost, \$	62.28	55.22	57.03

¹Corrected as shown in table 1.

Table 3. Experiment III. Creep-Feeding Until Spring Only and Different Creep-Feeds for Fall Calves (3-Yr. Average).

Lot number . . .	1	2	3	4	5	6
Creep-feed . . .	None	Mixture until weaning	Mixture until spring	Pelleted mix until spring	Alfalfa hay until spring	Pelleted alf. until spring
Number of calves	52	53	52	52	50	50
Initial weight per calf, lb.	140	142	137	133	137	140
Gain, Dec. to May, lb.	128	167	176	150	151	162
Gain, May to July, lb.	161	187	144	145	159	153
Total gain	289	354	320	295	310	315
Creep-feed per calf						
Pounds		803	256	162	225	238
Dollars		20.43	6.52	4.35	2.55	3.97
Dollar values						
Value of total gain	85.88	102.37	94.35	87.75	91.65	93.32
Value of gain minus creep-feed cost	85.88	81.94	87.83	83.40	89.10	89.35

Oklahoma's Wealth in Agriculture

Agriculture is Oklahoma's number one industry. It has more capital invested and employs more people than any other industry in the state. Farms and ranches alone represent a capital investment of four billion dollars—three billion in land and buildings, one-half billion in machinery and, one-half billion in livestock.

Farm income currently amounts to more than \$700,000,000 annually. The value added by manufacture of farm products adds another \$130,000,000 annually.

Some 175,000 Oklahomans manage and operate its nearly 100,000 farms and ranches. Another 14,000 workers are required to keep farmers supplied with production items. Approximately 300,000 full-time employees are engaged by the firms that market and process Oklahoma farm products.