TEXAS AGRICULTURAL EXPERIMENT STATION
A. B. CONNER, DIRECTOR
COLLEGE STATION, BRAZOS COUNTY, TEXAS

BULLETIN NO. 470 DECEMBER, 1932

DIVISION OF RANGE ANIMAL HUSBANDRY

Creep-Feeding Range Calves

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*Dean School of Veterinary Medicine. As of October 1, 1932.
**In cooperation with U. S. Department of Agriculture.
†In cooperation with Texas Extension Service.
††On leave.

Under certain conditions, it has been found profitable to supply grain to calves during their suckling period. This may be done by what is known as creep feeding. Creeps are enclosures in which the calves are fed and the entrances of which are of such size that the calves can enter but the cows cannot. A test on the Callaghan Ranch in Webb county during 1931-1932 took account of the results of creep-feeding 69 head of spring calves in comparison with 49 calves on a similar range but not creep-fed.

The creep-fed calves gained 114 pounds more per calf in a period of 160 days than did those not creep-fed; and after weaning, these creep-fed calves also gained 119 pounds per calf more in a period of 86 days than did the unfed calves. Creep-feeding enhanced the value of the calves ½c per pound at weaning time, and for both periods of feeding the ultimate advantage per calf was $3.92 per head. The cost of 100 lbs. of gain, in the creeps before weaning, was $2.36 and the cost of gain in the creeps for these same calves after weaning was $4.21 per hundred. The mothers of the creep-fed calves gained 80 pounds per head in 160 days, as against 29 pounds for the mothers of the unfed calves, but they consumed some of the grain while the calves were being taught to enter the creeps.

Calves from old cows made larger gains in the creeps than did the calves from young cows, but the calves from young cows made the larger gains on grass. Another interesting result was that calves weighing under 250 pounds at the beginning of the test gained in 160 days 9 pounds more than calves weighing more than 250 pounds at the beginning. There was no difference, however, in these two classes during the 86-day feeding period after weaning.

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BULLETIN NO. 470 DECEMBER, 1932

CREEP-FEEDING RANGE CALVES

(Progress Report)

I. During the Suckling Period, and

II. During an 86-Day Period After Weaning

J. M. JONES[1]
JOHN H. JONES[2]

The results of three experiments in the feeding of concentrates to suckling calves[3] at Sni-A-Bar Farms, Grain Valley, Missouri, during the period 1925-1927, showed that well-bred calves fed grain from the time they began to eat until weaning usually are fat enough for slaughter. Furthermore, the Missouri test showed that fed calves weigh approximately 100 pounds more at weaning time than calves which have not been fed grain. Therefore, in the light of the Missouri feeding experiments, the question has quite naturally arisen as to whether "creep-feeding" might, under certain conditions, be successfully practiced on Texas ranches.

To this end a cooperative agreement was entered into (August 1931) between the Texas A. & M. College, the Bureau of Animal Industry, U. S. Department of Agriculture, and J. B. Finley, Manager of the Callaghan Land and Pastoral Company, Encinal, Texas, for the purpose of determining whether the creep-feeding of suckling calves is practical under range conditions in South Texas.

Two periods were involved in this trial: the first extended from August 17, 1931 to weaning time January 24, 1932, or 160 days; the second from January 24 until April 19, 1932, or 86 days..

The Period Before Weaning

A selection of 118 grade Hereford cows and their steer calves was divided into two comparable groups and placed in separate pastures on August 17, 1931. The calves were numbered and weighed individually and the cows were weighed according to ages and groups. All were dipped to rid them of the cattle fever tick prior to being placed in their respective pastures. The same rate of stocking, approximately 30 acres for each cow with calf, was used for both lots, but it was not possible to include a similar number in each group because the pastures differed in size.

Lot 1 (creep-fed) consisted of 69 head of spring calves and their dams (Table 1), of which 41 calves were from old cows and 28 were from 3-year-old cows. The average initial weight of the 69 calves was 272.6 lbs.; the aged cows' calves, 278.7 lbs.; and the 3-year-old cows' calves, 263.7 lbs.

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[1]Acknowledgment is made of the helpful cooperation given by N. W. Jones, County Agent, Webb County, in the securing of the original data; and to A. L. Smith, Extension Animal Husbandman, Texas A. & M. College, for his valued suggestions in the planning and execution of this study.

[2]Agent in Animal Husbandry, joint employee of the Bureau of Animal Industry and the Texas A. & M. College.

[3]U.S.D.A. Technical Bul. 208, Beef from Calves Fed Grain Before and After Weaning. Nov. 1930. (Bureau of Animal Industry, and the College of Agriculture, and Experiment Station, University of Missouri, cooperating.)

This group was placed in a tick-free 2,000-acre pasture, but since the calves had not learned to eat, the cows and calves were confined to a 320-acre pasture adjacent to the creep, and for the first 43 days cows and calves alike had access to feed. All but 12 cows, whose calves were screw-worm cases, were taken off feed September 28, and these were removed October 12.

The feed supplied consisted of a mixture (by weight) of 4 parts ground milo heads to 1 part cottonseed meal. It was made available in two self feeders each 12 ft. in length. During the latter part of the feeding period ground ear corn replaced the milo heads, but the proportion of grain to cottonseed meal remained the same.

Lot 2 (check lot, not fed) consisted (Table 1) of 49 calves and their dams with 24 calves from aged cows and 25 head from 3-year-old cows. This herd was released in a tick-free 1500-acre pasture with grazing comparable to that of Lot I. The average initial weight of 49 head was 275.4 lbs.; the aged cows' calves, 269 lbs.; and the 3-year-old cows' calves, 281.4 lbs.

TABLE 1

Average Initial and Final Weights, and Gains of Calves During Suckling Period, 160 Days

Lot No.	Number of Calves	Average weight, pounds			Average daily gain, lbs.
		Initial lbs.	Final lbs.	Total gain per head	
	41 calves from aged cows, Aug. 17, 1931	278.7	.....	.....	.....
	28 calves from 3-yr.-old cows, Aug. 17, 1931	263.7	.....	.....	.....
1	Av. 69 calves, both groups	272.6	.....	.....	.....
	*30 calves from aged cows, Aug. 17, 1931	274.8	505	230.2	1.44
	*18 calves from 3-yr.-old cows, Aug. 17, 1931	260	471.4	211.4	1.32
	Av. 48 calves, both groups	269.3	492.4	223.1	1.39
	24 calves from aged cows, Aug. 17, 1931	269.1	.....	.....	.....
	25 calves from 3-year-old cows, Aug. 17, 1931	281.4	.....	.....	.....
2	Av. 49 calves, both groups	275.4	.....	.....	.....
	*23 calves from aged cows, Aug. 17, 1931	271.7	373.7	102.0	0.64
	*23 calves from 3-yr.-old cows, Aug. 17, 1931	282.8	398.7	115.9	0.72
	Av. 46 calves, both groups	277.3	386.2	108.9	0.68

*Eleven calves from aged cows and ten from 3-year-old cows in Lot 1, and one calf from old cows and two from three-year-old cows in Lot 2 could not be identified throughout the test and the final results therefore refer only to those whose identities were known.

The 48 calves in Lot 1 (Table 1), which were identified, averaged 269.3 lbs. at the beginning and 492.4 lbs. at the end of the first period, thus showing a total gain of 223 lbs. per head, or an average daily gain of 1.39 lbs. during the 160 days.

The 46 calves in Lot 2 (Table 1), which were identified, averaged 277.3 lbs. at the beginning and 386.2 lbs. at weaning time. Their average daily gain was .68 lbs.; their total gain was 109 lbs. per head, or 114 lbs. less per head than the creep-fed calves.

Feed Consumed (First Period)

Lot I* consumed 74,382 lbs. of the grain and cottonseed-meal mixture during the suckling period. As previously stated, the cows were fed during the first 43 days of the trial, but all of the feed was charged to the calves. On this basis the total amount per calf was 1,144.3 lbs., or 7.15 lbs. per head daily, and the feed cost was $5.27 per head, or $2.36 per 100 lbs. of gain. The cows receiving this feed gained 50.9 lbs. per head more than those unfed (Table 2) and this might be added to the gains of their calves if full benefits of this instance of creep-feeding are to be expressed.

TABLE 2

Average Initial Weights and Gains or Losses by Cows During First Period

Lot No.	Number of Cows*	Average initial wt., lbs.	Average final wt., lbs.	Gain lbs.
1	40 aged cows, Aug. 17, 1931	830	——	——
	28 3-yr.-old cows, Aug. 17, 1931	706	——	——
	68 head (both groups) Aug. 17, 1931	778.8	——	——
	61 cows (both groups) Jan. 24, 1932 (160 days)		858.5	79.7
2	25 aged cows, Aug. 17, 1931	828	——	——
	25 3-yr.-old cows, Aug. 17, 1931	732	——	——
	50 head (both groups) Aug. 17, 1931	779.6	——	——
	43 cows (both groups) Jan. 24, 1932 (160 days)		808.4	28.8

Sixty-eight mother cows in Lot 1 averaged 779 lbs. (Table 2) and 50 mother cows in Lot 2 averaged 780 lbs. at the beginning of the experiment. At the time of weaning the calves, a group of 61 Lot 1 cows, moxed ages, averaged 858.5 lbs., a gain of 79.7 lbs. per head, and 43 cows in Lot 2 averaged 808.4 lbs., a gain of 28.8 lbs. per head.

Valuations Placed on Calves at Time of Weaning

The first period of the experiment was concluded January 24, 1932, with the weaning of the calves. At that time a qualified committee of stockmen valued the Lot 1 calves at 5½ cents per lb., and Lot 2 calves at 5 cents per lb. On this basis 48 calves in Lot 1 (creep-fed) which averaged 492.4 lbs., were worth $27.08; less the cost of feed, $5.27, their value was $21.81 per head. Allowing a 3 per cent shrink, their value was $26.27 per head; and less the cost of feed ($5.27 per head), their value was $21.00. Forty-six Lot 2 calves averaging 386 lbs. had a value of $19.30, or with

*While 69 calves were placed in Lot 1 at the beginning of the test, two died and two others got out of the pasture during the early part of the experiment; therefore feed consumption was based on 65 head, but gain-in-weight computations were based on the 48 head whose identities remained unquestioned.

a 3 per cent shrink, $18.72 per head. Without shrink the creep-fed calves had a per head advantage over the other calves of $2.51, while on basis of a 3 per cent shrink their advantage was $2.28.

A point worthy of mention is that Mr. J. B. Finley, Manager of the Callaghan Ranch, stated that the mothers of the creep-fed calves, because of their better flesh, were worth $5.00 per head more when the calves were weaned than the cows in Lot 2. Another prominent ranchman stated that the gain on the cows in Lot 1 was worth the price of the feed supplied to the calves.

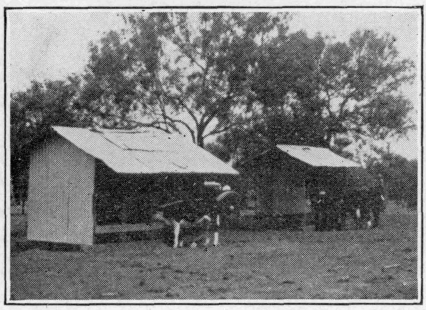

Figure 1.—Showing self feeders used in this study, conducted in cooperation with the Callahon Land and Pastoral Company.

Period II—The Period After Weaning

The Lot 1 and Lot 2 calves were returned to their same pastures for 86 days. The Lot 1 calves were continued on the "self feeders" and were fed the 4 to 1 ground ear corn and cottonseed-meal mixture. The average feed consumed per calf was 299.5 lbs. cottonseed-meal, 1198.06 lbs. ground ear corn, or 3.48 lbs. cottonseed-meal, and 13.9 lbs. ground ear corn per head daily.

TABLE 3

Average Weights and Gains Lot 1 Calves (Creep-Fed)

Period	Days	Number of Calves	Av. weights, lbs.			Average daily gain, lbs.
			Initial	Final	Total gain per hd., lbs.	
2nd	86	Av. wt. 30 calves from aged cows	505	676.2	171.2	1.99
2nd	86	Av. wt. 18 calves from 3-yr.-old cows	471.4	629.7	158.3	1.84
		Av. wt. 48 calves (both groups)	492.4	658.8	166.4	1.93
1st and 2nd	246	Av. wt. 30 calves from aged cows	274.8	676.2	401.4	1.63
1st and 2nd	246	Av. wt. 18 calves from 3-yr.-old cows	260	629.7	369.7	1.50
		Av. wt. 48 calves (both groups)	269.3	658.8	389.5	1.58

Feed Consumed (Second Period)

Nine hundred pounds of supplementary feed was required for 100 lbs. of gain. The feed cost for 100 lbs. of gain was $4.21, with corn at 23c per

bushel (75 lbs.) and cottonseed meal at $22.00 per ton. As shown in Table 3, the Lot 1 calves in the first period made an average gain of 166.4 lbs. per head, or an average daily gain of 1.93 lbs. The 30 calves from the *older group of cows gained 171.2 lbs. per head,* or an average daily gain of 1.99 lbs. as compared to a gain of 158.3 lbs., or 1.84 lbs. daily gain for the 18 calves from the 3-year-old cows.

Total Gains (246 Days)

The average daily gain during the two periods totaling 246 days for the 48 creep-fed calves was 389.5 lbs., or an average daily gain of 1.58 lbs. per head. The thirty calves from the aged cows gained 401.4 lbs., an average daily gain of 1.63 lbs., as compared to 369.7 lbs., and 1.5 lbs. for the calves from the younger cows.

Influence of Initial Weight on Gains Made by Creep-Fed Calves

In the creep-fed lot 17 head of calves with initial weights of 190 to 250 lbs., and averaging 229.41 lbs. were compared to 31 head weighing 250 to 360 lbs., and averaging 291.13 lbs. (Table 4). For the 160-day period the light calves gained 228.5 lbs. per head, the heavy calves 220.2 lbs., and for the 86-day period the gains were respectively 166.76 lbs. and 166.13 lbs. For the two periods the light calves had an advantage of 9 lbs. per head.

TABLE 4

Comparative Gains Made by Light and Heavy Calves from Older and Younger Cows in Lot 1

No. calves	Age mother	Average initial wt. lbs.	Av. gain 160-day period, lbs.	Av. gain 86-day period, lbs.	Total Av. gain 246-day period, lbs.
22 Heavy	Aged	292.5	232.73	172.27	405
9 Heavy	3-yr.-old	287.78	189.44	151.12	340.56
Av. 31 head		291.13	220.16	166.13	386.29
8 Light	Aged	226.25	223.12	168.13	391.25
9 Light	3-yr.-old	232.22	233.33	165.56	398.89
Av. 17 head		229.41	228.53	166.76	395.29

Figure 2.—Showing a group of the Callahan Land and Pastoral Company cows and calves.

The largest daily gain for the 246-day period was 2.01 lbs. and was made by a calf of 290 lbs. initial weight, while the smallest gain, 1.02 lbs., was made by a calf of 260 lbs. initial weight. A 190-lb. calf (the lightest calf included in the experiment) made a high gain, 1.75 lbs.

Comparison of Gains Made by Calves from the Older and Younger Cows

The old cows' calves (creep-fed) averaged 15 lbs. heavier (Table 1) than the calves from the young cows at the outset, and 33.6 lbs. heavier at weaning, January 24. Their average daily gain for the first period was 1.44 lbs., as compared to 1.32 lbs. for the calves from the young cows; and including the period after weaning (Table 3) their final weight advantage was 46.5 lbs. per head. This is a daily gain of .13 lbs. per head better than that made by the calves from younger cows.

The 23 calves from the old cows in Lot 2 (Table 1), were 11.1 lbs. per head lighter at the outset of the first period and 25 lbs. lighter at weaning time than the calves from the young cows. Their average daily gain was .64 lb., compared to .72 lb., or .08 lb. in favor of calves from the young cows.

Marketing Calves

The creep-fed calves were sold to Hausman Bros., Laredo packers, on April 19 at 5c per lb., weighed on the ranch. While 60 head were sold and weighed 654.6 lbs., the figures used in the results are based on the 48 head from this group whose identity was known throughout the test. The average final weight of these 48 head was 658.75 lbs., which at 5c per lb. equals $32.94 per head. After deducting cost of supplementary feeds for both periods ($12.27) they returned $20.67 per head.

The Lot 2 calves were shipped to Kansas on April 21 and averaged 433 lbs. per head. They netted $16.75 per head, or $3.86 per cwt. at the ranch, or $3.92 per head less than the creep-fed calves.

Slaughter Data

It is not possible to present a satisfactory analysis of this phase of the test, for the creep-fed calves were slaughtered over a period of approximately 30 days. Only 26 carcasses were identified. They had a dressed yield of 58.8 per cent and the shrinkage from hot to cold weights was 1.82 per cent. The average weight of the recovered caul and ruffle fat per head was 11.3 lbs., and the average weight of hides was 56.7 lbs.

Summary and Conclusions

Lot 1 calves were creep-fed on a concentrate mixture consisting of 4 parts ground milo heads and 1 part cottonseed meal.

Lot 2 was not fed but had pasture similar to Lot 1.

The test comprised two periods of comparison: (1) a period of 160 days, when calves were nursing; and (2) a period of 86 days after weaning,

when Lots 1 and 2 were held in their same respective pastures and Lot 1 had continued access to creep feeders with same feeds.

The 2,000-acre pasture, including a trap of 320 acres, was equipped with only one watering place, the creep being adjacent to the water lot to give assurance that the calves would have an opportunity to obtain feed.

During the suckling period the Lot 1 creep-fed calves were charged with 1,144 lbs. of feed, or an average consumption of 7.15 lbs. per head daily notwithstanding the fact that the cows consumed part of this feed while the calves were being taught to enter the creep. The total feed cost was $5.75 per head or $2.36 per cwt. of gain. Their average daily gain was 1.39 lbs. as compared to 0.68 lb. in Lot 2, or total gains of 223 lbs. and 109 lbs., respectively.

During the second period of 86 days, each of the creep-fed calves consumed 1,498 lbs. of feed, or an average of 17.4 lbs. per head daily, at a feed cost of $7.00, or $4.21 per cwt. of gain. Their average gain was 166.3 lbs. or 1.93 lbs. per head daily, as compared with 47 lbs. or 0.55 lbs. per head daily for the calves not creep-fed.

During the 246-day feeding period the creep-fed calves consumed 2,642 lbs. of feed, or an average of 10.73 lbs. per head daily, at a feed cost of $12.27, or $3.15 per 100 lbs. of gain. Their average gain was 389.5 lbs. per head, or 1.58 lbs. per head daily.

The mothers of the creep-fed calves gained 80 lbs. per head during the 160-day suckling period, as compared to a gain of 28 lbs. for the Lot 2 cows. At time of weaning they were valued at $5.00 per head more than the Lot 2 cows, because of their better flesh and thrift. This is probably due in part to their having limited access to feed for 43 days while on limited pasture and in part to the grain-fed calves' making less drafts on their mothers.

Creep-feeding enhanced the value of the creep-fed calves ½ cent per lb., and increased the gain 114 lbs. over calves not creep fed during the 160 day period before weaning. At the time of weaning, the creep-fed calves, except for a few individuals, lacked the finish desired for slaughter in their grade; yet they would have sold as slaughter calves and were appraised at $5.50 per cwt. as compared to Lot 2 stocker calves at $5.00 per cwt. At the close of the second period, the creep-fed calves had acquired a much better finish, and their margin, on a basis of the net sales price, had increased to $1.14 per cwt.

After 246 days of feeding, the creep-fed calves were acceptable fat yearlings not highly finished, but good killers, as indicated by an average yield of 58.8 per cent and 11.3 lbs. of internal fat. Individuals were of the finish expected of calves fed a grain ration in dry lot for a 6-month period.

The net value per head of the creep-fed calves, after deducting the feed costs, was $20.67 as compared to $16.75 for calves not creep-fed, of $3.92 per head in favor of creep-feeding.

There was little to choose between the performance of calves from aged cows or from first calves of 3-year-old heifers, in this single trial, although the calves from the old cows proved to be slightly better gainers on feed; the calves from young cows did slightly better on grass.

A comparison of light calves vs. heavy calves (light calves those under 250 lbs. initial weight) and heavy calves (those above 250 lbs. initial weight), showed that the light calves gained 9 lbs. per head more in 246 days, all of the advantage being gained in the first 160 days.

This method of feeding supplementary concentrates to young suckling calves as practiced in this experiment can only be recommended to ranchmen so situated that they are able to obtain low-priced concentrate feeds locally. It was difficult to get the calves started on feed and to that end it was necessary to feed the cows with the calves for a 43-day period. In large pastures, with several watering places, it is questionable as to whether the method would succeed unless there were creeps at most of the watering places.