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## Creep Feeding Calves for Baby Beef Production

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# Creep Feeding Calves *for* baby-beef production



Beeves From Creep-Fed Calves



Beeves From Non-Creep-Fed Calves

Animal Husbandry Department  
AGRICULTURAL EXPERIMENT STATION  
South Dakota State College  
Brookings, S. D.

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### COVER PICTURES

The two lots of beeves shown on the cover page illustrate the fact that the beeves from the calves that were not creep fed obtained almost as good a finish as the beeves from the calves that were creep fed.

# Creep Feeding Calves For Baby-Beef Production

By I. B. JOHNSON and F. U. FENN<sup>1</sup>

The production of beef in South Dakota represents one of the stockman's largest sources of income. For the 10-year period 1933 to 1942 inclusive, the sale of cattle and calves accounted for the largest part of farm and ranch income in this state.<sup>2</sup> Official estimates show that on January 1, 1943, there were 2,133,000 head of cattle and calves on the farms and ranches of South Dakota, and more than a million and a half were beef cattle. On the basis of these estimates, this state ranks tenth among all the states in number of beef cattle.<sup>3</sup> Herefords are most numerous in this area, followed by the Shorthorn and Aberdeen-Angus breeds. Some of the better beef-producing herds of the nation are on South Dakota farms and ranches.

Beef production always will be an important agricultural industry within South Dakota, for about half of the state's acreage consists of pastures and range, with the remaining acreage devoted to the production of feed crops and cash crops. Such land usage permits the movement of beef cattle from areas of production to areas of feeding or finishing within the state. Furthermore, live-stock markets are so situated both in South Dakota and at points adjacent to it that beef producers have a choice of near-by outlets for their cattle.

The production and marketing of baby beefs finished at an early age has become increasingly popular in the Midwest. It results in a quicker turnover than other methods of preparing beef for market, but there is a difference of opinion among South Dakota cattle growers as to whether it is profitable under their local conditions.

These growers also disagree as to whether creep feeding calves is profitable in the Northern Great Plains area. Creep feeding on pasture is the practice of allowing calves grain from a feeder or trough placed in a small shed or other enclosure which they can enter from the pasture through openings too small for the larger cattle to pass through. Such feeding of calves on pasture during the period they are being nursed by their dams has sometimes proved desirable in baby-beef production in areas south and east of South Dakota. Many producers here have asked if it is profitable in this state.

Another question asked by these cattle growers is whether average beef cows can be used to produce the kind of calves needed for baby beefs. As defined by Vaughan, a baby beef is a well finished steer or heifer of modern, blocky, early-maturing beef type and good quality, showing evidence of good beef breeding and ranging in age from 12 to 15 months and in weight from 800 to 1,000 pounds.<sup>4</sup>

<sup>1</sup> I. B. JOHNSON, Director of the South Dakota Experiment Station and Animal Husbandman; and F. U. FENN, Associate Animal Husbandman.

<sup>2</sup> *South Dakota Agricultural Statistics* for 1941 and 1942, South Dakota Crop and Livestock Reporting Service, Sioux Falls, South Dakota, p. 8. 1942, 1943.

<sup>3</sup> *Livestock, Meats, and Wool Market Statistics and Related Data, 1942*, Food Distribution Administration, U.S.D.A., pp. 1-2. June, 1943.

<sup>4</sup> VAUGHAN, H. W., *Types and Market Classes of Live Stock*, p. 100. 1941.



Cows, sire, and calves produced in this experiment. These cows were in the 1940 group. The herd sire was Rosewood Standard 1906376. The picture of the beeves, which were produced in 1939, was taken shortly before they were marketed in 1940.

In order to obtain answers to these questions, a baby-beef project was conducted at the South Dakota Agricultural Experiment Station, Brookings, in 1938-41. The purposes of this experiment were to determine (1) whether creep feeding of nursing baby-beef calves on pasture is a profitable production method in the Northern Great Plains area, and (2) whether average beef cows can be used to produce the kind of calf needed for desirable baby beefs.

## Management and Feeding Practices

**Breeding herd.** Thirty head of grade Shorthorn beef cows were purchased for this experiment during the first quarter of 1938. These cows (pages 4 and 6) were typical of most of the cows being maintained on the farms of eastern South Dakota. They were in calf when purchased and so the first crop of calves was of mixed breeding. A total of 51 cows with their calves were used in each pasture during the four trials. A few cows were culled out during the course of the experiment and only those with calves at foot at the beginning of the pasture periods were used each year.

A purebred Shorthorn bull (page 4) was purchased in May, 1938, to head the herd for the 4-year period of the experiment, and the three succeeding crops of calves were sired by him with the exception of six calves in the second trial which were accidentally sired by a scrub bull.

With a few exceptions, the annual calf crop was dropped during March, April, and May. When the weather was severe during the calving season, shelter was provided in a barn. Otherwise cows and calves were kept in yards. Before being placed on pasture, the bull calves were castrated, and all calves were dehorned and vaccinated for blackleg and hemorrhagic septicemia.

**Management of herd on pasture.** Before the cows and calves were placed on pasture, the weight of each animal was taken annually. In order to allow for differences in fill, these weights were taken on three successive days and the average weight was considered as the animal's weight at the beginning of the grazing period. The herd was then divided into two uniform lots according to weight, conformation, quality, and condition, plus age and sex of the calves. Each lot was placed in a separate pasture. No attempt was made to repeat previous lot divisions.

Two 19.5-acre pastures consisting of a mixture of bromegrass and bluegrass were used in this experiment. Water was provided in both pastures but no shade was available. The lots of cows and their calves were alternated on these pastures every 30 days except for the first year when each lot remained continuously on the same pasture during the grazing season. Alternating was done to eliminate any effect on the animals of difference in vegetation. The approximate date when the cattle were turned onto the pastures was June 1 and the average length of the grazing period was 158 days. The herd sire was turned in with the cows about July 1 each year and moved from one pasture to the other once each day during the breeding season.

One lot of calves was creep fed while on pasture. They had access to a self-feeder containing a mixture of equal parts of ground corn, ground barley, and

whole oats. Ten percent by weight of linseed-oil meal was added to the grain mixture during the last two years in order to increase the protein content of the feed. The calves that were not creep fed did not have any grain before weaning.

The cows and calves in each lot were allowed salt at all times. The cows were fed additional roughage toward the close of the grazing period whenever the grass became very short.

During the third year, five of the cows and their calves were handled separately. With this group, the calves were kept at the barn and fed grain and the cows were brought up from the pastures mornings and evenings to nurse the calves. This method of handling did not prove practical because of the extra care and labor required. The results for this small group were not included in the summary given in Table 1 (page 8).

Weights of the cows and calves were taken again on three successive days when they were removed from the pastures, and at that time the calves were weaned and placed in the feed lots. A market grade and valuation as determined on the farm was placed on each lot of feeder calves at weaning time.

**Wintering cows and fattening calves.** The cows were wintered as one herd. They were fed roughage consisting of about one-fourth cane fodder or hay, one-half corn silage, and one-fourth oats straw and were allowed all of these roughages that they would eat. Those in poor flesh at the beginning of each winter were fed 3 pounds of ground corn and 5 pounds of alfalfa hay per head daily in addition to the roughage. Barn shelter was provided the cows during stormy and severely cold weather.

Each lot of calves was fed separately in dry lots. The average ration per head consisted of shelled corn, 13.4 pounds; linseed meal, .7-pound; and alfalfa hay, 5.2 pounds. Good-quality feeds were used in each of these fattening trials. The corn graded No. 2 yellow, shelled, and the alfalfa hay was of U. S. No. 1,



The cow herd used in this experiment is shown above at winter quarters.

leafy grade. The protein supplement used was old process linseed-oil meal, 35 to 37 percent crude protein. Representative samples of these feeds from each trial were analyzed chemically. The calves had access to salt while in the feed lot and in the last two years' trials steamed bone meal and ground limestone were also available.

**Marketing beeves produced.** The beeves were sold at the Sioux Falls market. The heifers weighed 775 to 875 pounds and the steers 900 to 1,000 pounds. With the exception of the fourth year the lots were topped out several times and the animals marketed as they attained sufficient finish. For these first three years the calves which were creep fed required 194 days in the feed lots to reach this weight and the calves not creep fed required 212 days. In the fourth year all of the cattle in both lots were marketed at the same time—after having reached an average weight of 1,000 pounds following a 237-day feeding period. Two hogs were kept in each feed lot to pick up waste feed.

Weights were taken on three successive days when the baby beeves were ready to be marketed. The live grade and selling price were obtained for each animal when it was weighed out of the feed lot. Data were obtained on the shrinkage per head, dressing percent, and carcass grade for each animal marketed. However, each year five to eight head were reserved for replacement heifers of for steers to be used for student judging work.

In determining the feed costs, the market prices which actually prevailed during each year's trial were used. Yearly pasture rental was charged at the rate of \$3.50 per acre. Other items included in the cost of the calves at weaning were fall and winter feed for the breeding herd, interest on the investment in the herd, depreciation on cow herd, breeding fees and veterinary and vaccination fees.

## **Method of Rating Meat From Baby Beeves**

The color of the "rib eye" or rib muscle was checked by packinghouse graders for the carcasses from the cattle marketed in the 1938 and 1939 trials. The rib color was noted when the carcasses were quartered ("ribbed down") after chilling in the cooler rooms.

Wholesale rib cuts from carcasses representative of each lot in the 1938 and 1939 trials were obtained and held in a cooler at 34° F. for 12 days. A roast which was three ribs in width from the midsection of each rib was roasted at a moderate temperature (300° F.) in a carefully controlled electric oven until rare to medium done (136° F. internal roast temperature). These roasts were weighed before and after cooking and the shrinkage was computed. Other samples of the fresh ribs were analyzed chemically.

A palatability committee comprised of five men and women experienced in tasting and grading meats scored slices of the roasted beef in respect to aroma, texture, tenderness, flavor of fat and lean, and juiciness. The standard palatability grading chart used in the National Cooperative Meat Investigations was used by the Committee in scoring these samples. Samples of these roasts were also tested for tenderness with a Warner-Bratzler shear.



## Results of the Experiment

The results for this 4-year beef-production enterprise were assembled for the four annual pasture periods and then these were combined with the feed-lot fattening results for the baby heaves.

The loss in weight per cow at weaning for the four years averaged 9.2 pounds per head for the cows nursing creep-fed calves and 11.3 pounds for those nursing non-creep-fed calves.

### Return From Calves Sold at Weaning

Creep feeding the calves resulted in an average weight of about 72 pounds more per calf at weaning, improved the condition, quality, and general appearance of the feeder calves one market grade, and raised the market value an average of 80 cents per hundredweight (Table 1).

At weaning time, the creep-fed calves were worth \$46.11 per head and the non-creep-fed calves \$35.99 per head, but the grain consumed by those that were creep fed increased their cost \$6.50 per head. Both lots returned a profit, on the average, for the four pasture periods. (However, for the 1941 pasture period, the

TABLE 1. CREEP-FED CALVES AT WEANING AS COMPARED WITH NON-CREEP-FED CALVES AT WEANING  
(Results of four annual grazing trials, 1938-41; average pasture period, 158 days)

Items	Creep-fed calves (Lot 1)	Non-creep-fed calves (Lot 2)
Total number of calves .....	51	52*
Initial weight per calf .....	<i>lb.</i> 176.2	<i>lb.</i> 176.3
Final weight .....	496.9	424.4
Gain in weight .....	320.7	248.1
Daily gain .....	2.03	1.57
Grain mixture per calf .....	763.4	-----
Feeder grade (lot average) .....	Good	Medium
Cost of grain per calf .....	\$ 6.50†	-----
Cost per calf at weaning .....	40.05	\$32.90*
Cost per hundredweight at weaning .....	8.06	7.75
Estimated sale price (per hundredweight on farm) .....	9.28	8.48
Estimated sale price per calf .....	46.11	35.99
Estimated profit per calf .....	6.06	3.09
Net pasture return per acre annually .....	7.46	5.56
Weight of Cows		
Total number (for 4-year period) .....	51	51
Initial weight per cow each season .....	<i>lb.</i> 976.6	<i>lb.</i> 968.9
Final weight .....	967.4	957.6
Loss in weight .....	9.2	11.3

\* This figure includes one pair of twin calves. The cost per calf was based on the cost per cow, which was lowered in the non-creep-fed group because of these twin calves. Consequently the cost per calf in the non-creep-fed group was also lower than it would have been without the twin calves. The difference between the calf costs in the creep-fed and the non-creep-fed groups, therefore, was slightly more than \$6.50, the cost per creep-fed calf for grain.

† The average prices of the creep feeds per bushel were as follows: shelled corn, 51¢; oats 25¢; barley 40¢. Linseed-oil meal cost \$36.50 per ton. A grinding charge of 6¢ per hundredweight was included for the corn and barley. The prices given for corn and barley represent the average of the feed costs per calf each year.

non-creep-fed calves were produced at a loss of \$2.98 per head but the profits of the three previous years more than offset this loss.) The profit from the four crops for the non-creep-fed calves was only \$3.09 per head and for the creep-fed calves it was \$6.06 per head. On the basis of these profits the creep-fed lots gave an annual net return for both feed and pasture of \$7.46 per acre of pasture as compared to \$5.56 per acre for the calves not creep fed.

### Return From Calves Sold After Fattening

The results of the four annual fattening trials are given in Table 2. A total of 101 head of feeder calves were fattened in the feed lots after they were weaned and taken off the pastures. Each year the calves that had been creep fed while on pasture gained at a slower rate in the feed lot and required more feed for each 100 pounds of gain than those not creep fed. They were finished a few weeks ahead of the non-creep-fed calves and outsold them slightly on the market. The difference in quality and finish was less than one market grade. The average grade for the creep-fed calves was Top Good and for those that were not creep fed, Good.

As shown in the figures on page 10, the profit for the non-creep-fed

TABLE 2. CREEP-FED CALVES AT CLOSE OF FATTENING PERIOD AS COMPARED WITH NON-CREEP-FED CALVES AT CLOSE OF FATTENING PERIOD (1938-41)

Items	Creep-fed calves (Lot 1)	Non-creep-fed calves (Lot 2)
Total number of calves fed .....	51	50*
Number of days calves were fed .....	205	218.5
	<i>lb.</i>	<i>lb.</i>
Initial weight (average) .....	496.9	431.9*
Final weight .....	898.7	895
Gain in weight .....	401.8	463.1
Daily gain .....	1.96	2.12
Feed per 100 pounds gain:		
Corn (shelled) .....	684.3	624.4
Protein Supplement (linseed-oil meal) .....	36.0	32.0
Alfalfa hay .....	267.6	240.0
Market shrink per head .....	23	27
Pork gains per baby beef .....	12.3	13.8
Live grade (average) .....	Top Good	Good
Cost per 100 pounds gain .....	\$ 7.85†	\$ 7.07†
Selling price per hundredweight .....	10.35	10.11
Gross return per head .....	90.63	87.75
Initial cost per head at weaning .....	40.05	32.90
Feed cost head .....	31.54	32.74
Marketing expense per head .....	2.09	2.11
Profit per head‡ .....	16.95	20.00

\* A small calf too young to wean for the feed lot and the death of one calf soon after it was placed in the feed lot caused these figures to vary from those for this group at the end of the pasture period.

† The average prices of the feeds used were as follows: shelled corn, 51¢ per bushel; linseed-oil meal, \$37.88 per ton; and alfalfa hay, \$6.88 per ton. Costs of salt and mineral are also included. The feed costs that existed each year were used.

‡ Labor and overhead expenses were not included and no credit was allowed for pork gains or manure produced.

calves was \$3.05 per head more than for the creep-fed calves. The profit per head at the end of the fattening period was consistently in favor of the non-creep-fed

	<i>Creep-fed calves</i>	<i>Calves not creep fed</i>
Selling price per hundredweight .....	\$10.35	\$10.11
Gross return per head .....	90.63	87.75
Profit per head .....	16.95	20.00

calves for each of the four trials, the difference ranging from \$1.57 in the 1940-41 trial to \$4.82 in the 1938-39 trial. The pork gains were similar for each lot.

### Quality and Palatability of Meat

The color of the "rib eye" or rib muscle for 40 carcasses (20 from each lot) from the beeves in the 1938 and 1939 trials was reported as follows: Lot 1 (creep fed)—15 bright, 3 fairly bright, 1 dull, and 1 poor; Lot 2 (not creep fed)—21 very bright, 15 bright, 2 fairly bright, 1 dull, 1 poor. None were reported dark.

The average force required by the Warner-Bratzler shear to cut through 18 samples of cooked rib muscle, one inch thick, taken from six wholesale ribs, each from a representative Lot-1 carcass in the 1938 and 1939 trials, was 16.0 pounds. The average of similar tests on the same number of samples of Lot-2 beef from these trials, was 14.6 pounds. However, this difference was not consistent between the meat from the two lots of cattle and was not significant. The average of the tenderness scores given by the palatability committee for the roasted beef from these same ribs, was nearly identical for the meat from the creep-fed and non-creep-fed beeves, both rating tender.

The palatability committee scored the roasted-beef samples from the Lot-1 beeves as being slightly more desirable on the average, in respect to aroma, flavor of lean, and quality of juice, while their scores averaged slightly in favor of the Lot-2 beef on texture, tenderness, and flavor of fat. All of the beef was rated excellent in respect to these various palatability factors.

The shrinkage while roasting averaged 14.9 percent for the beef from the Lot-1 carcasses and 12.9 percent for the Lot-2 beef. Ninety percent of this difference in shrinkage was due to loss in drippings. This difference is significant and indicates that the roasts from the creep-fed beeves contained a higher percent of fat.

Chemical analyses of the fresh meat from these representative ribs did not show appreciable differences. However, the "rib eye" muscles of the creep-fed beef did average .68 percent higher in fat content than those from the non-creep-fed beeves.

These tests were not continued for the 1940 and 1941 trials because significant differences were not obtained in respect to the "rib eye" color, cooking and palatability data, and chemical analyses of the meat from the two lots in the first two trials, and also because all of the beef from both lots proved to be of excellent quality and palatability.

## Application of Results to Beef Production

**Weight of cows.** Loss in weight of the cows with calves that were creep fed and of cows with calves that were not creep fed did not differ enough to be significant (Table 1). The slight loss of weight at weaning time during the first two years was due to overstocking of pastures. Because of this overstocking, it was necessary to feed the cows some roughage during the latter part of the grazing period.

The change in weight varied considerably between years, ranging for cows with creep-fed calves from a gain of 18.9 pounds per cow in 1940 to a loss of 42.7 pounds in 1938 and for cows with calves not creep fed from a gain of 24.4 pounds per cow during 1938 to a loss of 52 pounds during 1941.

**Gains in calf weights.** The individual gains of the calves while on pasture were analyzed statistically, and the differences between the two lots was very significant. The gains were consistently much larger each year for the creep-fed calves. As with the cow weights, there was considerable difference in the gains of both lots during different years, ranging for the creep-fed calves from a low of 285.6 pounds per calf in 1938 to 373.5 pounds in 1940 and for non-creep-fed calves from 231.6 pounds in 1938 to 286.6 pounds in 1940 (Table 3).

This difference in weights can undoubtedly be explained by the difference in rainfall and rate of stocking during the four annual trials although the addition of linseed-oil meal to the creep-fed grain mixture during the last two years may also have helped to cause increased gains by creep-fed calves during these periods.

The rate of stocking (Table 3) was 14, 15, 10, and 12 cows for the successive trials of the experiment. The lighter stocking during the 1940 and 1941 trials very likely accounted for much of the increased gains per calf during those particular years. However, it is interesting to note that the greatest amount of calf gains per acre or per pasture was obtained during the first two years when the pastures were stocked heavier. This was true in both lots, but particularly true for the non-creep-fed calves. Such heavier rate of stocking, however, may not prove advisable if the practice is continued over a long period because of the possibility of injuring the stand of grass in the pasture.

TABLE 3. ANNUAL GAINS OF CREEP-FED AND NON-CREEP-FED CALVES ON PASTURE UNDER HEAVY AND MODERATE STOCKING (1938-41)

Year	Stocking rate		Gains of creep-fed calves			Gains of non-creep-fed calves		
	Cows per pasture	Acres per cow	Per calf	Per pasture	Per acre	Per calf	Per pasture	Per acre
	<i>number</i>	<i>number</i>	<i>lb.</i>	<i>lb.</i>	<i>lb.</i>	<i>lb.</i>	<i>lb.</i>	<i>lb.</i>
1938.....	14	1.39	285.6	3,998.4	205.0	231.6*	3,473.5	178.1
1939.....	15	1.30	294.7	4,420.5	226.7	240.5	3,607.5	185.0
1940.....	10	1.95	373.5	3,735.0	191.5	286.6	2,866.0	146.9
1941.....	12	1.62	350.1	4,201.1	215.4	246.4	2,956.8	151.6
Four-year average.....	12.75	1.53	320.7	4,088.8	209.7	248.1*	3,226.0	165.4

\* There were 15 calves from 14 cows in the 1938 trial because of 1 pair of twins.

The results for the pasture periods indicate that if calves are sold at weaning it will pay feeder-calf producers to creep feed calves which are on pasture and being nursed by their dams as long as feeder buyers are willing to pay a higher price for the fleshier, more attractive feeder calves produced with creep feeding.

**Creep feeding for purebred stock.** The higher plane of nutrition while being nursed gave the creep-fed calves deeper bodies and made them of more desirable type even after the feed-lot fattening period. This factor is of value to purebred breeders. If they can improve the appearance and type of their calves by spending a few dollars per head for creep feeding, it may mean many dollars' difference in the price that they can obtain for these animals as breeding stock.

**Creep-fed calves more profitable at weaning.** The increased weight at weaning of more than 70 pounds over the weight per non-creep-fed calf added materially to the returns obtained per feeder calf or per acre of pasture. At weaning the creep-fed calves in these four trials returned a profit of \$2.97 more per head than the non-creep fed calves and a profit of \$1.90 more per acre per season, even though their cost of production was about \$6.50 more per calf because of the added cost of grain fed in the creep (Table 1, page 8).

**Non-creep-fed calves more profitable after fattening.** On the other hand after the calves were fattened in the feed lot, the profits for the complete baby-beef production enterprise were larger for the non-creep-fed calves. As fat beefs they returned an average of \$3.05 more profit per head (Table 2). While in the feed lots, these lighter, thinner feeder calves nearly caught up with the creep-fed calves in weight, finish, market grade, and market value. The calves not creep fed made their feed-lot gains with an average of 60 pounds less corn for each 100 pounds of beef produced, 4 pounds less protein supplement, and 27.6 pounds less alfalfa hay.

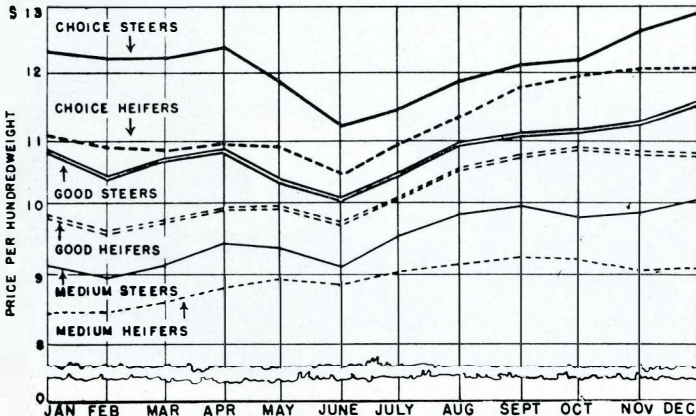
These figures indicate that the non-creep-fed calves utilized their feed more efficiently. Such saving of feed, especially of grain and protein supplement, is particularly important during the present war emergency because of the shortage of these feeds. This saving partly offsets the lower market returns from the non-creep-fed beefs and together with their lower cost at weaning accounted for the greater profit in not creep feeding for baby-beef production.

From the standpoint of feeders who buy their calves, the results of these trials indicate that lighter, thinner calves not creep fed are likely to be a more profitable investment than fleshy, creep-fed calves, provided the thinner calves are of comparable breeding. It should be kept in mind that the non-creep-fed calves used in these trials were always thrifty and in moderately good condition and were always taken fresh from the pasture at weaning time and placed in the feed lots.

Another important observation is that except for some of the poor-quality, plain calves sired by nondescript bulls in the first and second trials, desirable baby beefs were produced each year. Also, it was not necessary to creep feed in order to produce desirable baby beefs for the market.

## Marketing Time Important

The fat beefs in each of the first three years' feeding trials were marketed each year during April, May, June, and July, as the heifers reached weights of 775 to 875 pounds and the steers 900 to 1,000 pounds. In the fourth year's trial the beefs in both lots were marketed on July 7. This period of marketing



MONTHLY PRICES OF FAT STEERS AND HEIFERS OF CHOICE, GOOD, AND MEDIUM GRADES, SIOUX CITY, IOWA, MARKET (1939-42)

occurred when the market prices for the choice and good grades were at comparatively low price levels for the year (see graph above). As a consequence the profits were not so large as they might have been if the higher grade steers in each of the lots had been carried to heavier weights. If the heifers had been fed to heavier weights, they would not have sold so well on the market.

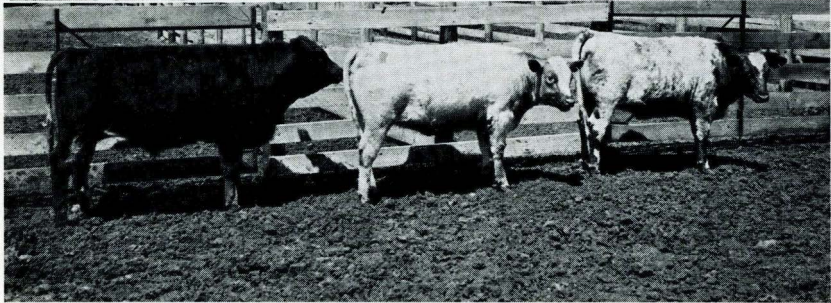
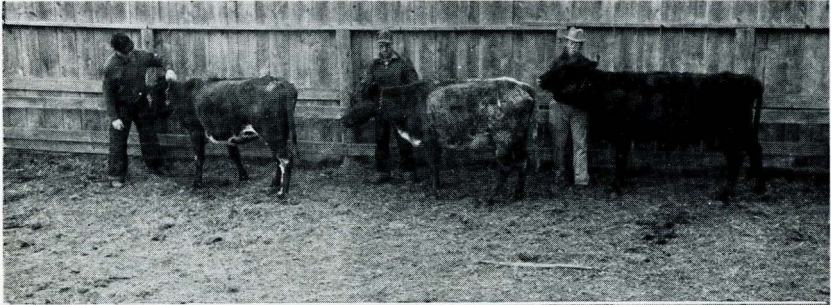
Cattle feeders should keep in mind the seasons of the year when the level of prices is highest for the class and quality of cattle they plan to market. It is of course desirable to market the fat cattle when the higher levels of market prices prevail. The medium grades of fat cattle sell relatively high during the spring months and the better grades sell higher during the fall months.

A statistical analysis showed that the difference in the rate of gain of the creep-fed and non-creep-fed calves in the feed lot was highly significant. When all calves in the feed lot were supplied all of the fattening feeds they wanted, the calves that were creep fed while on pasture consistently gained at a slower rate than those not creep fed.

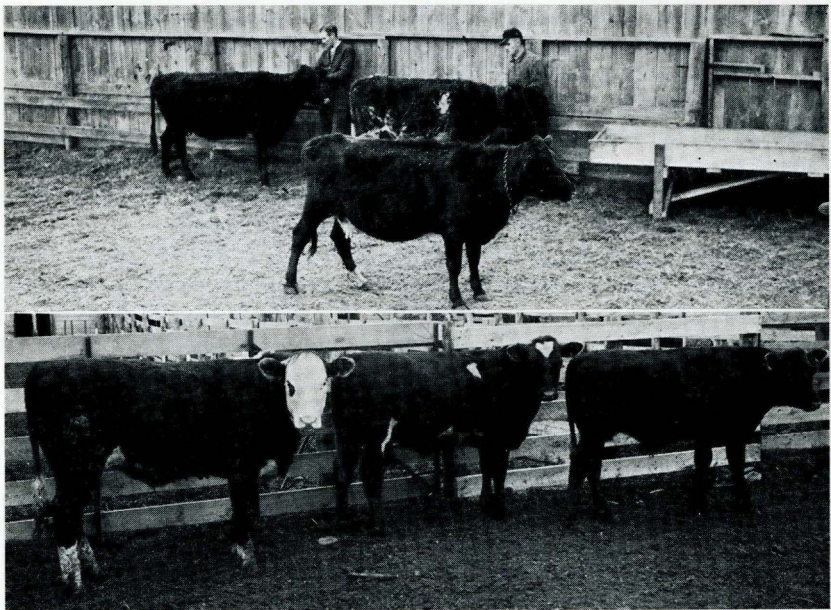
## Value of A Good Purebred Sire

The influence of the good purebred bull in siring the calves used in the last three trials is shown in the conformation, type, and quality of some of the calves from the 1939 trial which are pictured on page 14. Evidently average-grade farm cows of fair beef breeding when bred to a good, purebred, beef-type bull will produce calves suitable for baby-beef production.

All calves sired by the good purebred bull were accepted on the market as baby beefs of good to prime grade. The average grade of the first year's baby



Beeves sired by the purebred bull had deep, blocky bodies although they were out of such shallow-bodied average-grade cows as shown in the top picture. The influence of the purebred bull is obvious when these calves of the 1939 trial are contrasted with the calves below, which were sired by the scrub bull.



Beeves sired by the scrub bull were inferior to those of the purebred bull even though their dams, shown above them, were deep bodied. These beeves were from the 1939 trial.

beeves of mixed breeding and of the six calves sired by the scrub bull in the second trial was definitely lower than that of the calves sired by the purebred herd sire.

**Calves from scrub bull.** A separate analysis was made of results from the 1939 trial with six calves accidentally sired by a scrub bull. They were born several weeks earlier than the calves sired by the purebred bull. They were handled with the rest of the herd, three of them being placed in the creep-fed lot and three in the non-creep-fed lot. The contrast in appearance of three representative calves from the remainder of the calf crop for that year with their dams is shown on page 14. The blockier, deeper body conformation, shorter legs and necks, and more beefy appearance of the calves sired by the purebred bull can be noted readily. This was true though the dams of the scrub-sired calves were deeper-bodied and definitely of better type than the average of the cow herd.

The calves sired by the scrub bull were observed to be much inferior to the other calves in beef type, conformation, and quality, throughout the entire trial. When marketed they were discounted considerably in price per hundredweight. These six calves sired by the scrub bull returned an average of \$7.54 less profit per head than the calves sired by the purebred bull (Table 4). On this basis, a purebred bull that sired a carload of baby beeves in 1939 was worth for that year alone about \$185 more as a herd sire than a scrub bull where calves were fed out for baby beeves.

It is realized that the data used for this comparison are based upon an insufficient number of calves to be conclusive and that they are the result of that part of the experiment which was conducted only one year. However, the comparison of calves sired by a purebred bull and by a scrub bull was an interesting accidental outgrowth of this project and the results serve to indicate the greater earning power of a good purebred beef sire for the production of baby beeves.

TABLE 4. FEED-LOT DATA FOR BABY BEEVES PRODUCED BY A PUREBRED BULL AND BY A SCRUB BULL OUT OF AVERAGE-GRADE BEEF COWS (1939)

Items	Beeves sired by scrub bull	Beeves sired by purebred bull
Number of head .....	6*	24*
Initial weight .....	483.0 <i>lb.</i>	417.5 <i>lb.</i>
Market weight .....	832.5	847.1
Live grade .....	Medium	Good
Selling price per hundredweight .....	\$ 9.08	\$ 9.59
Return per head (net) .....	74.32	79.65
Cost per head at weaning .....	38.35	33.14
Feed cost per head after weaning† .....	26.97	29.97
Profit above feed cost per head .....	9.00	16.54
Average dressing percent .....	61.3	61.0
Average carcass grade .....	Medium	Good

\* There were twice as many steers as heifers in each group.

† Cost of calves at weaning was prorated back on basis of cost per 100 pounds of beef produced. Feed prices: corn, 48¢ per bushel; linseed-oil meal, \$37 per ton; and alfalfa hay, \$8 per ton.



## Summary

In order to determine whether creep feeding of nursing calves on pasture is a profitable practice in producing baby beefs, an experiment was conducted at the South Dakota Agricultural Experiment Station during 1938-41 inclusive. Thirty ordinary grade Shorthorn beef cows and a purebred Shorthorn bull comprised the breeding herd for this experiment. The purebred bull sired all the calves used in the experiment except those for the first trial, which were of mixed breeding, and six calves in the second trial which were accidentally sired by a scrub bull.

Results of the experiment may be summarized as follows:

1. Creep-feeding the beef calves on pasture did not pay when the grower also fattened these same calves in the feed lot. The thinner, lighter-weight, non-creep-fed calves were a more profitable investment for feed-lot fattening than the heavier, fatter, creep-fed calves at the feeder-calf prices prevailing during these trials.

2. If the grower had sold the calves at weaning, creep feeding would have been more profitable than not creep feeding. This situation will prevail only as long as feeder-calf buyers continue to pay a premium price for the added condition of the calves.

3. Non-creep-fed calves produced beef more efficiently in the feed lot than creep-fed calves. They consistently required less feed for 100 pounds gain than the creep-fed calves in these trials. Such feed saving, especially of grain and protein supplies, is particularly important during the present war emergency.

4. Desirable baby beefs were produced from average grade farm cows of only fair beef breeding, when sired by a good purebred beef sire and properly finished in the feed lot, regardless of whether the nursing calves were creep fed while on pasture.

5. Calves sired by beef bulls of nondescript breeding were not suitable for the production of the most profitable baby beefs.

6. Information obtained in one of the four trials indicates that a farmer producing and feeding a carload of 25 baby beefs annually will find a good purebred beef bull worth approximately \$185 more per year as a herd sire than a scrub bull, at such prices as prevailed for cattle and feeds in 1939-40.