

## CREEP FEEDING OF FALL-BORN CALVES

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Creep feeding of fall calves has been an integral part of the fall calving program initiated at the Squaw Butte Station in 1964 (Raleigh, Turner and Phillips, 1970). The primary criteria of the fall cow's performance is the ability to produce a live calf each year (Foster and Raleigh, 1973ab). While milk production is important, emphasis has been placed on intensifying management to take advantage of management alternatives for the fall-born calf (Raleigh *et al.* 1970). Most creep feeding research has been done with spring-born calves on green forage. Ward (1970) concluded that although creep feeding increases the weaning weight, it may not be economically practical; particularly, if the calves are held over to be sold as yearlings. Scarth *et al.* (1968) increased summer gains on creep-fed fall-born calves by 41 kg when calves were creep-fed during the summer only. Results have been variable and apply only to restricted areas.

This research was undertaken to determine the advantage or disadvantage for creep feeding fall-born calves during the winter and/or summer grazing periods from shortly after birth to weaning.

### Experimental Procedure

In trial 1, 104 cow-calf pairs that were calved in October and November were stratified to treatment on the basis of previous treatment, age, and production index of the cow, and age, weight, and sex of the calf. The study was a 2 x 2 x 2 factorial with two levels of energy, two sources of N for the cows (cow results in companion paper) and two levels of creep feed for the calves. The creep feed was fed *ad libitum* in pelleted form. Wooden creep feeders constructed from plywood which hold about 500 kg were placed in the leeward side of a windbreak. The windbreak area was fenced with a creep panel on each end allowing calves access to the area. Dry straw was also provided in the creep area for bedding to encourage calves to utilize the area.

The treatments, from initiation of study until weaning, were creep feed or no creep feed available. Composition of the creep feed is presented in table 1.

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Calves were in paired fields with identical creep windbreak areas provided. They received meadow hay with their dams, ad libitum. Water, salt and a salt-bonemeal mix were available at all times. The trial was initiated on December 9, final winter weights were taken March 31, and the calves were weaned July 30. Cattle grazed in adjoining pastures during the summer with feed provided near the water for the creep fed calves.

TABLE 1. CREEP RATION TRIALS 1 AND 2 <sup>a/</sup>

| Ingredient <sup>b/</sup> | Percent |
|--------------------------|---------|
| Alfalfa                  | 80      |
| Barley                   | 13      |
| Molasses                 | 5       |
| Salt                     | 2       |
| Total                    | 100     |

<sup>a/</sup> Creep fed free choice.

<sup>b/</sup> 75 mg of Terramycin and 20,000 IU of vitamin A per 454 grams of feed.

The following year, trial 2 was conducted using 92 cow-calf pairs. Pairs were allotted on the basis of the previous year to the same experimental design (table 2), except the calves were on a switchback creep treatment during the summer. One half of each winter treatment (creep or no creep) received the opposite treatment during the summer. The study was initiated on December 23 with the winter portion ending March 16, and calves were weaned July 20. The creep ration was the same composition as in trial 1 (table 1). All statistical analysis was by AOV (Steel and Torrie, 1960).

TABLE 2. EXPERIMENTAL DESIGN TRIAL 2

| Item                        | Creep | No creep |
|-----------------------------|-------|----------|
| <b>Winter</b>               |       |          |
| Steers                      | 23    | 23       |
| Heifers                     | 23    | 23       |
| <b>Summer <sup>a/</sup></b> |       |          |
| Steers                      | 21    | 21       |
| Heifers                     | 22    | 24       |

<sup>a/</sup> In summer a switchback was used with 1/2 of winter creeped calves switched to no creep and vice-versa.

## Results and Discussion

Creep fed calves gained more ( $P < .01$ ) during the winter during both trials (tables 3 and 4) than non creep-fed calves. In trial 1 there was a 30 kg advantage in gain during the winter plus 7 kg in summer for a total advantage in gain of 37 kg due to creep feeding the calves. Winter creep feed intake was 151 kg/head and cost \$6.97. Using \$.77/kg for value of gain less creep feed cost, a return of \$52.32 per head compared to \$36.19 was realized from creep vs no creep feeding for a net advantage per head of \$16.13. The advantage in the summer on good grass was much less with a net advantage of \$2.11 being realized from the creep feed.

TABLE 3. PERFORMANCE, CREEP INTAKE, COST, AND RETURN OF CALVES ON CREEP AND NON CREEP FED RATIONS IN TRIAL 1 <sup>a/</sup>

| Item                              | Period |          |        |          |
|-----------------------------------|--------|----------|--------|----------|
|                                   | Winter |          | Summer |          |
|                                   | Creep  | No creep | Creep  | No creep |
| Calf weight in trial, kg          | 54.    | 58       | 136    | 114      |
| Calf weight final, kg             | 131    | 105      | 232    | 202      |
| Period gain, kg                   | 77     | 47.      | 96.    | 89       |
| Avg. daily period gain, kg        | .66    | .40      | .92    | .85      |
| Total creep intake, kg/head       | 151.   | ---      | 71     | ---      |
| Creep intake, kg/head/day         | 1.29   | ---      | .68    | ---      |
| Total creep cost <sup>b/</sup> \$ | 6.97   | ---      | 3.28   | ---      |
| Creep cost/head/day               | 0.576  | ---      | 0.031  | ---      |
| Value of gain @ \$.77/kg          | 59.29  | 36.19    | 73.92  | 68.53    |
| Minus cost of creep feed \$       | 6.97   | ---      | 3.28   | ---      |
| Net value of gain \$              | 52.32  | 36.19    | 70.64  | 68.53    |
| Net advantage for creep \$        | +16.13 |          | +2.11  |          |
| Total advantage for creep \$      | +18.24 |          |        |          |

<sup>a/</sup> Costs and returns were considered on feed and animal values alone since labor, investment, and other factors will vary from ranch to ranch.

<sup>b/</sup> Creep cost \$.046/kg.

In trial 2, the wintertime advantage was not as great with only 14 kg advantage for the creep fed calves. The results obtained during the summer portion of the study points out the necessity for a winter creep feeding program. Calves which received no winter creep feed were unable to make up the weight difference compared to creep-fed calves during the summer. Summer gains were 79, 88, 91, and 94 kg for no creep winter, no creep summer (NC-NC); **creep** winter - no creep summer (C-NC); no creep winter - creep summer (NC-C) and for creep both periods (C-C), respectively. Due to their smaller size at turnout and a

relatively short grazing season, 3 1/2 months, the smaller calves are unable to compensate for their lower winter gains. This is similar to what was shown by Foster and Raleigh (1971) for yearling steers on high desert ranges. Calculating cost and return figures as in trial 1, the total returns over controls (NC-NC) was C-NC, \$9.60; NC-C, \$5.71; C-C, \$10.70. This indicated that economic returns from creep feeding are possible both winter and summer; however, winter creep feeding is the more critical and if fed during the winter, the summer creep might be optional. This is important since many ranchers cannot creep feed on their summer ranges due to the vastness of range, scattered waterholes and other physical problems.

TABLE 4. PERFORMANCE, CREEP INTAKE, COST AND RETURN OF CALVES ON CREEP AND NO CREEP FED RATIONS IN TRIAL 2 <sup>a/</sup>

| Item                                  | Winter |          | Summer |       |       |       |
|---------------------------------------|--------|----------|--------|-------|-------|-------|
|                                       | Creep  | No creep | NC-NC  | C-NC  | NC-C  | C-C   |
| Calf weight, initial                  | 60     | 61       | 103    | 119   | 101   | 118   |
| Calf weight, final                    | 123    | 110      | 182    | 207   | 192   | 212   |
| Period gain, kg                       | 63     | 49       | 79     | 88    | 91    | 94    |
| Avg. daily period gain, kg            | .61    | .47      | .75    | .83   | .86   | .89   |
| Total creep intake, kg/head           | 123    | ---      | ---    | ---   | 50.4  | 50.4  |
| Creep intake, kg/head/day             | 1.18   | ---      | ---    | ---   | .5    | .5    |
| Total creep cost <sup>b/</sup> \$     | 8.11   | ---      | ---    | ---   | 3.53  | 3.53  |
| Creep cost/head/day \$                | .077   | ---      | ---    | ---   | .033  | .033  |
| Value gain @ \$0.77 kg                | 48.51  | 37.73    | 60.83  | 67.76 | 70.07 | 72.38 |
| Minus cost of creep feed \$           | 8.11   | ---      | ---    | ---   | 3.53  | 3.53  |
| Net value of gain \$                  | 40.40  | 37.73    | 60.83  | 67.76 | 66.54 | 68.85 |
| Net advantage for creep <sup>c/</sup> | 2.67   | ---      | ---    | 6.93  | 5.71  | 8.03  |
| Total advantage for creep \$          |        |          | 9.60   |       | 5.71  | 10.70 |

<sup>a/</sup> Costs and returns were considered on feed and animal values alone since labor, investment, and other factors will vary from ranch to ranch.

<sup>b/</sup> 106 day trial, creep cost \$.066/kg.

<sup>c/</sup> Net figured that over NC-NC for summer.

There were no statistical differences in winter calf gains in either trial due to supplemental treatment of the dam. There were differences in cow performance due to creep treatment of the calf (see companion paper).



## Summary

One hundred four cow-calf pairs (trial 1) that were calved in October and November were stratified to treatment on the basis of previous treatment, age, production index of the cow, weight, age, and sex of calf in a 2 x 2 x 2 factorial design with two levels of energy and two sources of N for cow, and two levels of creep feed for calf. Cow data is reported in a companion paper. The following year (trial 2) had 92 pair allotted to the same design with the calves placed on a switchback design during the summer. The calves received ad libitum a pelleted alfalfa-grain creep feed or none. Creep feeding during the winter resulted in greater gains during the winter ( $P < .01$ ) and summer ( $P < .05$ ). Calf gains based on dam's supplement during the winter were not different. Weaning weights in trial 1 were 232 kg for creep fed calves compared to 202 kg for non-creep fed calves. In trial 2, weaning weights (kg) were as follows: no creep controls, 182; creep winter, no creep summer, 207; no creep winter, creep summer, 192; creep continuous, 212. These data indicate that creep feeding the fall-born calves is of primary importance during the winter because on the high desert ranges calves not creep-fed during the winter do not compensate for this lack of gain before weaning.

## Literature Cited

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