# USING HIGH ENERGY RATIONS FOR CALVES AT WEANING

Raymond J. Douglas and James L. Nelson

The weaning period is critical in a calf's life and if the weaning weight is to be maintained and a normal gain obtained, the calf's ration must be high in energy with ample available protein. The National Research Council's findings show that a 400-pound calf requires 7.0 pounds of total digestible nutrients, with 0.9 pound of digestible protein, in order to make gains of 1.6 pounds per day.

A trial was started in October, 1968, and continued for four years to evaluate the practice of feeding calves a high energy ration for a period of three weeks after weaning. The first three years the ration included oats, tame hay, soybean oilmeal and terramycin crumbles. The ration fed in 1971 was modified by removing both the soybean oilmeal and the terramycin crumbles. In all four years of the trial, the calves were vaccinated for blackleg and malignant edema, and for enterotoxemia, types C and D.

General procedure for the trial was to weigh all of the calves produced by the Experiment Station herd at weaning, about the middle of October. They were then allotted by sex and given access to the high energy ration. The ration was fed free-choice, and was made up initially of three pounds of oats and top quality crested wheatgrass-bromegrass hay. The oats was gradually increased to a level of five pounds per head per day.

Table 1 summarizes the rations fed, feed cost and cost of grain. Table 2 shows weights and gains over the four-year trial period.

*Douglas is animal husbandman and Nelson is assistant animal husbandman, Dickinson Experiment Station.*

**Summary**

It has been a profitable practice to feed high energy rations to calves for a three-week period at weaning in each of the four trial years reported here.

**Table 1. Average Daily Rations Fed, Feed Cost and Cost of Gain in the High Energy Ration Trial.**

| | 1968 | 1969 | 1970 | 1971 | 4-Yr. Avg. |
|---|---|---|---|---|---|
| | | | **Steers** | | |
| Tame hay (lbs.) | 4.2 | 7.1 | 7.3 | 7.1 | 6.42 |
| Whole oats (lbs.) | 3.8 | 4.0 | 3.9 | 4.1 | 3.95 |
| Soybean oilmeal (lbs.)[1] | 0.6 | 0.6 | 0.7 | — | 0.63 |
| Terramycin crumbles[1] | 350mg. | 250mg. | 260mg. | — | 287mg. |
| Calculated TDN | 5.36 | 7.03 | 7.15 | 6.54 | 6.52 |
| Feed cost per head | $ 3.25 | $ 2.99 | $ 3.95 | $ 2.67 | $ 3.22 |
| Cost per hundred pounds - gain | $15.07 | $10.33 | $10.92 | $11.76 | $12.02 |
| | | | **Heifers** | | |
| Tame hay (lbs.) | 4.2 | 6.2 | 7.1 | 6.7 | 6.05 |
| Whole oats (lbs.) | 3.8 | 4.1 | 3.9 | 4.1 | 3.98 |
| Soybean oilmeal (lbs.)[1] | 0.6 | 0.6 | 0.7 | — | 0.63 |
| Terramycin crumbles[1] | 350mg. | 250mg. | 260mg. | — | 287mg. |
| Calculated TDN | 5.36 | 6.63 | 7.04 | 6.34 | 6.34 |
| Feed cost per head | $ 3.23 | $ 2.88 | $ 3.90 | $ 2.63 | $ 3.16 |
| Cost per hundred pounds - gain | $18.94 | $13.32 | $10.56 | $13.40 | $14.06 |

[1]Not fed in 1971.

Agricultural Experiment Station
NORTH DAKOTA STATE UNIVERSITY
of Agriculture and Applied Science
University Station
Fargo, North Dakota 58102
Publication

DIRECTOR

to

POSTAGE PAID
U.S. DEPARTMENT OF
AGRICULTURE

U.S.MAIL

R. L. WITZ
AGRIC. ENG. DEPT.

Average feed cost for both steers and heifers for the four-year period is $3.20. Average gain for the feeding period for both steers and heifers for the four-year period is 25.5 pounds. At this rate of gain, the required return per pound of beef to pay the feed cost is 12.5 cents. Average November selling price for 400 pound calves at Dickinson over the past four years has been about $36 to $40 for steers and $31 to $34 for heifers. Using these prices as a basis, feeding high energy rations to calves for three weeks after weaning has returned between $5.25 and $6.25 per head over feed costs.

**Table 2. Average Weights and Gains of Calves in the High Energy Ration Trial.**

| | 1968 | 1969 | 1970 | 1971 | 4-yr. Avg. |
|---|---|---|---|---|---|
| | **Steers** | | | | |
| Days on trial | 20 | 17 | 21 | 20 | 20 |
| Number of head | 48 | 39 | 43 | 49 | 179 |
| Avg. Oct. weight per head | 381.6 | 386.0 | 388.3 | 364.2 | 380.0 |
| Avg. Nov. weight per head | 403.2 | 414.4 | 424.4 | 386.9 | 407.2 |
| Avg. weight gain per head | 21.6 | 28.4 | 36.1 | 22.7 | 27.2 |
| Avg. daily gain per head | 1.08 | 1.67 | 1.72 | 1.14 | 1.40 |
| | **Heifers** | | | | |
| Days on trial | 20 | 17 | 21 | 20 | 20 |
| Number of head | 49 | 54 | 44 | 51 | 198 |
| Avg. Oct. weight per head | 370.5 | 382.5 | 373.2 | 342.4 | 367.2 |
| Avg. Nov. weight per head | 387.6 | 404.4 | 410.1 | 361.8 | 391.0 |
| Avg. weight gain per head | 17.0 | 21.9 | 36.9 | 19.4 | 23.8 |
| Avg. daily gain per head | 0.85 | 1.25 | 1.76 | 0.97 | 1.21 |

Steers gained faster in three out of four trials, and were more efficient to feed than were heifers.

It should be emphasized that this trial represents a very minimum feeding period of 20 days following weaning. The calves from this trial go directly to other feeding trials where they gain two pounds or more per day until they reach slaughter weight. They could be continued on the high energy ration for any length of time desired in excess of 20 days if the intent of the producer was to sell them as backgrounded calves.

It should also be emphasized that calves at the Dickinson Experiment Station are **always** vaccinated for blackleg and malignant edema, and for type C and D enterotoxemia (over-eating disease) before being fed high energy ration after weaning.