Management

How Winter Nutrition Influences Cow Production

By John Paterson, Executive Director of Education

Proper winter cow and heifer nutrition affects calf performance, health and survivability more than any other factor. Fall and winter grazing generally reduces production costs when compared to feeding a full ration of hay or other feeds. However, fall and winter range pastures alone may not maintain body weight and condition of the cow. Intake of winter forages has generally been between about 1.2 percent and 2.2 percent of body weight, or between 12 and 25 pounds per day.

It is generally more difficult for spring calving cows to meet their nutrient requirements when grazing winter range without supplementation. Underfeeding late-gestation cows can lead to weak calves and stillbirths. In addition, cows can only respond to a vaccine if they have proper energy, protein, and mineral levels in their diet. If a cow isn’t taking in enough protein to maintain her body condition, she can’t make antibodies (which are proteins) and put them in her colostrum for her calf. Therefore, vaccinating cows to protect calves through colostrum will only work with proper cow nutrition.

A classic study comparing protein vs. energy supplements for cows grazing winter range was done at the USDA research station in Montana. When supplemented with soybean meal (protein), cows increased winter range forage intake and digestibility while the barley grain (energy) supplement decreased both intake and digestibility of the forage. Remember that this approach works best for cows that just need to maintain body condition and will not be effective if cows need to put on body condition during the winter months. This is a good argument for fall supplementation of thin cows, when environmental conditions are much better than the winter months.

Researchers from New Mexico State University conducted experiments with yearling range heifers to compare performance when supplemented with either a 41 percent protein supplement (high protein) versus a 9 percent protein-energy supplement (low protein). In addition, the experiment was designed to determine how pregnancy rates were affected if the supplements were fed once a week or two times per week.

The first experiment compared performance of yearling heifers fed a cottonseed cake supplement three times per week vs. heifers fed the same supplement once per week. The results of these two trials are presented in Table 1.

Growth rates were not affected by supplementing heifers once a week versus three times per week. Interestingly, fall pregnancy rates were not different between treatments. The reason that there were lower pregnancy rates in the second year was because many of the heifers had not reached puberty when the trial was conducted.

The second New Mexico study was conducted to compare yearling heifer response when fed one of three supplements: 1) cottonseed meal cake fed twice a week at 7 lbs. per feeding; 2) a grain cube containing 9 percent protein fed twice a week at 6.4 lbs. per feeding and 3) the same grain cube fed daily at 1.9 lbs. per head per day as seen in Table 2.

Total gains were much better for heifers fed the protein supplement twice weekly (80 pounds of gain) compared to heifers fed the 9 percent protein grain-cube twice weekly (lost 59 pounds) or fed the cube daily (gained 22 pounds). The loss in weight is most likely due to a depression in both forage intake and forage digestibility. The most interesting results were that source of supplement had a dramatic effect on first service conception rates. While all the heifers fed the high protein supplement conceived during the first 21 days, only 59 percent of the heifers fed grain cube twice weekly (low protein and high energy) conceived during the first 21 days. The heifers fed grain daily were intermediate (81 percent).

When fed a grain cube twice weekly, first service and overall pregnancy rates were poorer than feeding the grain cake daily. First service conception rates favored protein supplementation (41 percent protein) rather than grain cake (9 percent protein). Once again, it is hypothesized that the loss in productivity was due to upsetting the rumen environment (rumen bacteria) when a large amount of grain was fed twice weekly.

Both of these studies lead us to ask the question about the use of self-fed supplements: liquids, tubs, meals, blocks. This will be discussed in next month’s column.

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