Introduction

Feeding range cattle through the winter is the most costly aspect of many livestock operations in northeastern Nevada. However, if hay quality is matched to the nutritional demands of cattle, the purchase of supplements can be reduced and herd production can be increased. This can be accomplished by simply planning the sequence of hay feeding.

Improving hay quality through fertilization, water management, species composition and time of harvest may also reduce the cost of winter feeding. A nutritional analysis of 302 grass hay samples harvested from 70 northeastern Nevada ranches between 1946 and 1987 supports the above statements.

Critical Months for Nutrition

In northern Nevada, January, February and March are nutritionally critical months for the cows that will calve at the beginning of April. Nutritional demands are approximately 10 percent greater during the last third of the pregnancy. Allowing cows to lose excessive condition prior to calving will delay birth the following year. This is due to delayed estrus.\(^5\)

Inadequate nutrition during the three months after calving (April, May and June) is even more detrimental to reproduction the following year. During these three months, nutritional demands are 20 percent higher than pre-calving requirements for cows and 25 percent higher for first-calf heifers. If the nutritional demands of the cows are not met during these critical six months (January through June), conception rates can be greatly reduced or delayed.\(^5,6\) The same effect has been demonstrated with bred yearling heifers.\(^1,2\)
Matching Hay Quality

A feeding plan based on the nutritional demands of cattle and quality of feed on hand can easily be developed for hay listed in Table 1. Table 1 allows comparison of the nutritional values of the hay to the nutritional needs of the 1,000-pound cow for nine months (from the middle of pregnancy to three months after calving.) For the purpose of discussion it is assumed that there is an adequate supply of each hay listed.

Middle Third of Pregnancy

The poorest quality hay of the four listed is the late cut, non-fertilized hay (Table 2). Producers should feed this hay during the middle third of pregnancy when the cow's nutritional demands are low. Late cut hay falls just short of meeting requirements for protein and phosphorous, but meets or exceeds requirements for energy and calcium during the middle term of pregnancy.

Last Third of Pregnancy

The early cut non-fertilized hay (Table 3) and the late cut, fertilized hay (Table 4) exceed the requirements for a cow in the middle third of pregnancy. The increased nutritional value of these hays will supply adequate nutrition for cows in the last three months of pregnancy when a phosphorous supplement is added. An energy-based supplement may be necessary under conditions of cold stress because the total digestible nutrient (TDN) values for these hays come close to meeting the cow's minimum energy requirements.

First Three Months After Calving

The early cut, fertilized hay (Table 5) is the only feed listed that meet all the cow's requirements following calving. Nutritional demands are the highest during this time because of lactation.

Minimize Costly Supplements

By efficiently managing the winter feeding program it is possible to meet nutritional demands of the cow herd and minimize supplementation. Hay quality statistics listed in this publication are averages for hays produced on northeastern Nevada ranches during the past 40 years. An average figure can only be used as a guide because nutritional value varies from field to field and from one year to the next. Because of this, testing is essential in order to minimize supplement feed costs. The costs of forage testing are minimal compared to the costs of most protein and/or energy supplements.

Importance of Forage Quantity

Cattle require quantities of nutrients not percentages of nutrients. The percentage of nutrients needed to balance the rations discussed in this fact sheet will be incorrect when the amount of hay fed is less or more than the quantity required (depending on the weight and physiological condition of the animal). Cattle can suffer from "hollow belly" when insufficient forage is fed no matter what the forage nutrient density. Generally, an animal's dry matter intake ranges from 1 to 3 percent of its body weight depending on the forage quality. The higher the forage quality the greater the intake. Also, it is important to remember that environmental conditions often create the need for additional forage intake during winter months.
**Purchasing Hay**

Purchasing additional feed based on the quality and quantity of feed on hand can save money. Northern Nevada livestock producers have access to alfalfa hay markets in southern Idaho and northern Nevada. Hay that does not meet dairy industry specifications can be purchased cheaper than processed supplements on the basis of actual protein per pound. A combination of homegrown hay, purchased alfalfa hay and a phosphorous supplement will usually balance the nutritional needs of the cow herd during critical periods of the year.

The best way to purchase feed, and balance a ration with feed on hand, is through nutritional chemical analysis and least cost ration formulation.

**Information Sources**


