



Cattle Producer's Handbook

Nutrition Section

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Supplementation Strategies for Grazing Beef Cattle

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In grazing operations, there are times when forage quality and availability are limited and ruminants are unable to consume enough nutrients from pasture forage to fulfill requirements. During such situations supplemental feeding is necessary to meet production goals.

Numerous commercial feed supplements are available to producers, who have an unlimited number of options for the development of custom supplements. It may be difficult to decide which supplement type (i.e., energy, protein, etc.) best fits the goals of the livestock production system.

A fundamental understanding of ruminant nutrition is helpful in making these decisions. It is also important to choose a delivery method that provides the targeted amount of desired nutrients to each animal in the herd and minimizes input costs.

The objectives of this publication are to aid producers in deciding the supplement type needed for grazing beef cattle and to describe the characteristics of supplement delivery methods.

General Ruminant Nutrition

Ruminants are different from pigs and humans in that they have a rumen that allows for fermentation of ingested feedstuffs before it reaches the stomach (called the abomasum in the cow). The rumen provides an optimal environment for the existence and growth of microorganisms.

Rumen microorganisms have their own nutrient requirements. To fulfill these requirements they “break down” or digest feed consumed by the animal and use it for energy to support microbial growth. At the same time, rumen microorganisms release volatile fatty acids that are used by the ruminant as the major source of energy (calories).

The bodies or cells of the microorganisms eventually pass out of the rumen. Once they reach the small intestine they can be digested by the ruminant, and since these cells contain approximately 50 percent protein, they contribute to the protein supplied to the animal.

This symbiotic relationship allows ruminants to utilize forages much more efficiently than nonruminants. However, this relationship also adds to the complexity of predicting and effectively meeting the nutrient requirements of ruminant animals.

Ruminants must have energy to survive; nevertheless, it is the microorganisms in the rumen that must “unlock” (digest) the energy in the forage to make it available to the ruminant. In order to digest forage, the microorganisms must have nitrogen that is primarily found in protein. Generally, when protein is supplemented to grazing cattle it is to ensure that the rumen microbes have enough nitrogen to digest forage efficiently.

The availability of forage and its chemical composition (primarily crude protein content) are the first factors that must be considered in developing an effective grazing nutrition program. If the objective is to meet the nutrient requirements as economically and efficiently as possible, the first limiting nutrient must be identified and supplemented in a cost-effective manner. The decision to feed a protein supplement, energy supplement, or a combination supplement, should be dependent on forage supply, protein content, and cow body condition.

Protein Supplementation

The primary factor limiting cattle performance on forage diets is energy intake. However, intake of mature or dormant forages is often limited because these forages have an inadequate amount of crude protein. An example of the relationship between crude protein content of forages and forage intake is presented in Fig. 1.