



Vet Call

► by **Bob Larson**, Kansas State University

Nutritional aspects of cattle health

Nutrient needs change throughout the year based on stage of production. Nutrient availability changes throughout the year as well, and it takes a well-versed herd manager to develop a cost-effective diet that meets cattle requirements.

Nutritional needs

Meeting the nutritional needs of cattle is the foundation of herd health. Nutritional needs differ between bulls, dry cows, lactating cows, growing replacement heifers and calves postweaning; and the nutrient composition of forage changes throughout the year. Because of the interaction between changing animal needs and changing forage conditions, herd managers must be informed and prepared to provide appropriate supplements when needed. In almost all situations when cattle have the opportunity to graze green, growing forages that are high in quality and readily digestible, the only supplement needed is salt (and, based on local soil and plant characteristics, possibly other minerals).

However, even green, growing grass has the potential to cause health problems if the concentration of magnesium (Mg) is low in the lush grass leaves at the same time that cows' magnesium requirements are high, such as during early lactation or late pregnancy (see April 2014 "Vet Call" column for more information).

While green, growing forage is an excellent feed source for cattle, weather factors and growth characteristics of grass limit its availability to cattle. For many weeks of the year, cattle only have access to mature or dormant forage that has reduced quality and digestibility. Standing dormant forage and moderate-quality hay can meet most, if not all, of the energy and protein needs of cattle that have relatively low nutritional demands, such as mature cows that are not lactating and bulls that are not active.

However, if cattle are growing or lactating,

dormant forage or hay may be deficient in energy and/or protein, and these nutrients must be supplemented to avoid inadequate growth or even weight loss. The maturity and quality of forage when it is cut for hay, as well as the conditions in which the hay dries before baling, have tremendous impact on the nutrients present.

Waiting to cut hay until the forage is very mature may increase the tonnage available, but the quality may be so low that either the cattle will not be provided needed nutrients or the needed supplementation will drive up the total diet cost. Because growing replacement heifers, growing bulls and cows in late stages of pregnancy or early lactation have high nutrient needs, these classes of cattle require higher-quality forage or more supplementation than adult, non-lactating cattle.

Forage differences

Forage and readily available energy and protein supplements vary greatly across North America, making knowledge of the local forages and feeds

essential when planning the most cost-efficient diets for cow herds. The types of predominant forage plants and the growth patterns of the different plants in diverse areas of the country greatly impact the quality of the diet for grazing cattle. Many forages and feeds have specific characteristics that can have potential negative effects on health and production, as well as affect diet quality.

Use of some supplemental feeds has to be limited due to adverse effects when fed at high levels. For example, the high starch

content of corn and other grains limits their use in forage-based diets. The potentially high levels of sulfur in corn gluten feed, distillers' grain and some other byproduct feeds requires that they be used in moderation,

and gossypol in cottonseed meal can cause reduced fertility in bulls, which requires that this

feed be fed for a limited time or in limited amounts in the weeks ahead of the breeding season.

Deficiencies and problems

Cattle that are not receiving adequate amounts of water, energy, protein, salt, and required vitamins and minerals can exhibit a wide range of problems that include poor growth, weight loss, failure to become pregnant, hair and skin lesions, bone and joint problems, and susceptibility to sicknesses such as pneumonia, scours and nervous-system disease. Unless underlying nutritional problems are identified and corrected, use of vaccines, antibiotics and other interventions will not improve herd health. In many situations outright disease is not detected, but nutrient deficiencies are negatively affecting body weight and fertility of the herd.

Fortunately, cattle will thrive on many different types of forages and feeds. The rumen has the ability to convert moderate- and even low-quality feeds into needed nutrients. Because cattle can eat a wide variety of feeds, locally available products that could not be easily shipped to other parts of the country or used in other animal diets can serve as excellent cattle feeds. Knowledge of the nutrient needs of different classes of cattle, as well as experience with local forages and feeds will allow cattle producers and their advisors to develop cost-effective diets that meet the needs of cattle to maintain good health and productivity.

EMAIL: rlarson@vet.k-state.edu

Editor's Note: Bob Larson is professor of production medicine at Kansas State University.



Because cattle can eat a wide variety of feeds, locally available products that could not be easily shipped to other parts of the country or used in other animal diets can serve as excellent cattle feeds.