Principles of Protein Supplementation

Greg Lardy, NDSU Animal Sciences

If you are planning on utilizing dormant or other low quality forages in your winter feeding programs, protein supplementation will generally be required to maintain beef cow productivity, ensure a healthy calf at calving, and ensure the cows return to estrous quickly following calving.

Low quality forages are typically low in protein, vitamin A, and minerals such as phosphorus. Factors such as cow condition, cow nutrient requirements, previous forage and pasture management, and weather, will determine when and if protein supplementation will be required. A wide variety of products are available for use as protein supplements. Alfalfa hay, oilseed meals, grain processing coproducts such as dried distillers grains, and a myriad of commercial products can all be used for supplements. The choice depends on cost, availability, pasture accessibility, and other factors.

Extension personnel and feed company nutritionists have access to diet quality data for your area and can assist you in determining when to start supplementation programs. Knowledge of nutrient content of the basal forages, intake, and cow requirements can help you fine tune protein supplementation programs and improve overall returns by focusing on timely supplementation with the right products.

The purpose of protein supplements is to first provide a nutrient source for the rumen microorganisms, and second to provide nutrients for the cow. The rumen bacteria need rumen degradable protein in order to efficiently ferment the fiber in dormant forages and provide the cow with energy, protein, and other nutrients. Most oilseed meals and grain processing coproducts contain relatively high proportions of rumen degradable protein. In the case of distillers dried grains, about 60% of the crude protein is rumen undegradable or escape protein. However, research indicates that it still works well as a protein supplement for low quality forages because the cow is able to recycle nitrogen to the rumen in the form of urea.

A common question that comes up during discussions on protein supplementation is “Can urea be included in a protein supplement?” The answer is yes. I typically recommend that no more than 40% of the crude protein equivalents in the supplement be from urea if you are going to use it for supplementing cows on a forage diet. For example, if you buy a 30% crude protein supplement, no more than 12 of those crude protein units should come from urea (30% CP X 40% urea = 12 CP units from urea). The logic behind this is that some species of ruminal bacteria can utilize urea as a sole source of protein. However, many require preformed amino acids and/or peptides from

natural protein sources in order to thrive. Those that require amino acids or peptides also tend to be species that are very important in fermenting fiber. Consequently, you generally see improved responses with some natural protein as part of your supplemental protein package.

Research data from across the country indicate that protein supplements don't need to be fed daily. In fact, several studies indicate they can be offered as infrequently as once weekly with similar performance to supplements offered daily. The reason this is possible is that God has graced the cow with the ability to recycle this protein (actually she recycles the urea) to the rumen. This results in fuel and labor savings in situations where supplementation is needed but daily visits are not required. In addition, many commercial self-fed products (cooked molasses blocks, self-fed liquids, salt limited supplements, and others) are available which can be used to cut down on supplement delivery costs. These self-fed products are particularly useful in situations where pastures are a long distance from the ranch or farm headquarters and daily supplementation with conventional supplements may be cost prohibitive. In addition, these self-fed products can be used to improve pasture utilization and draw cattle into areas where terrain or other limitations might otherwise reduce utilization.

In summary, protein supplements may be needed on many of the pastures your cows are grazing this fall and winter. Consult your local Extension personnel or nutritionist for more information in helping you make an informed and cost effective protein supplementation decision.

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County Commissions, North Dakota State University and U.S. Department of Agriculture cooperating.