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### **Protein Supplement for the Cowherd**

The first killing frost of the season makes it seem like fall is finally here. Many pasture leases run through October, so the traditional summer pasturing of cattle now turns to feeding cows through fall and winter, often on lower quality forages. As the quality of forage declines, protein supplementation needs to be considered. Many factors contribute to what works best for your operation, just know that not all protein sources are equal and thought needs to be given before purchasing the supplement.

Daily energy intake is often the limiting factor to cows while grazing dormant forages, crop residues and other lower crude protein feedstuffs. As forages mature there is an inadequate supply of crude protein which directly effects feed intake and ultimately limits energy intake. Intake declines rapidly as crude protein falls below the 7% mark in a particular feedstuff. This is attributed to a deficiency of nitrogen (protein) in the rumen, which inhibits activity of the rumen microbes. We have to remember that our protein supplementation is often targeted at feeding the “bugs” of rumen microbes.

If the forage diet contains less than about 7% crude protein, feeding a protein supplement generally improves the diet quality and cow performance by improving their forage intake and digestion. This is why cows consuming low-quality forages require additional protein to maximize performance and forage utilization. Protein supplements can be offered in a range of daily feeding to as infrequently as once per week to accomplish this. Every class of livestock, in various production phases, have their own requirements, but a general range is 0.25 to 1 pound of protein per head per day.

Not all protein supplement is created equally. Supplemental protein is available in many forms including cakes, grain mixes, blocks, tubs, or plants such as cover crops. The overall crude protein content varies widely, with crude protein coming from natural protein sources or non-protein nitrogen sources such as urea or biuret. An additional consideration may be the ratio of ruminally degradable protein to rumen undegradable protein, which basically shows a level of utilization of protein directly by the cow versus degradation within the rumen environment.

Non-protein sources, like urea, are generally a less expensive nitrogen/protein source found in cooked molasses tubs and liquid molasses feeds. Urea works best in high-energy diets that contain crude protein levels below 12 percent. If lower quality forages are the main diet, cattle performance can be reduced if urea is supplemented in place of higher quality, natural protein supplements like dried distillers, soybean meal or cottonseed meal. This is likely the result of insufficient rumen undegradable protein in the diet to meet the actual protein needs of the cow. Urea has a rapid rate of degradation in the rumen, which can result in lack of nitrogen use for forage digestion and result in increased nitrogen loss in urine.

All of this can add complexity to developing a protein supplementation strategy, but doing the research and comparing what is actually in supplementation product can pay dividends. Remember, the cow and the rumen microbes both have requirements for protein, which may not be provided by all types of protein supplements. Research has shown that meeting the rumen microbe requirements for nitrogen first with the remaining portion of crude protein being rumen undegradable can result in increased growth or weight gain, increased reproduction, and increased nitrogen or protein utilization.

Determining what is best for your particular situation starts with your feeding situation, knowing what the feed label/total ration nutrient values are and pushing the pencil on the economics of it all. Your local Extension agent should be willing to help you talk through these calculations or the K-State Beef Cow Nutrition Guide C735 [https://bookstore.ksre.ksu.edu/pubs/beef-cow-nutrition-guide\\_C735.pdf](https://bookstore.ksre.ksu.edu/pubs/beef-cow-nutrition-guide_C735.pdf) is a great reference.