Ridin' Herd

► by **Rick Rasby,** *Extension beef specialist, University of Nebraska*

Buy supplements right

Feed costs make up 50% or more of annual cow costs. Management practices that keep cows grazing to meet the majority of their nutrient needs are almost always more economical than carrying harvested feeds to them to eat. It is important to understand the nutrient needs of the cow herd. Nutrient needs increase as the cow herd goes through the different stages of production, or as cows progress from mid-gestation to late gestation to lactation. Understanding where the "gaps" are in terms of nutrient deficiencies relative to the base diet can allow producers to know when a supplement is needed. Knowing when to supplement and how much to supplement affects profit potential of the cow-calf enterprise.

Buying supplements

Cattlemen often pose the following question: *I know my cows that are in mid-gestation and grazing dormant native range are deficient in protein. What protein source is my best buy?*

One of the challenges is that supplement costs, when priced on a ton basis, may look a lot alike price-wise, but the supplements under consideration may differ in protein content, and that's where part of the confusion originates.

Another confusing aspect is that the protein supplements being considered many times differ in moisture content, so that throws another wrench into the pricing process.

To make direct comparisons of these supplements, purchase the supplements on a per-pound-of-nutrient basis. If the cows are deficient in protein, then protein supplements can be purchased based on cost per pound of protein. The same thought process can be used if energy (TDN) or phosphorus, or any nutrient for that matter, is needed to supplement the base diet.

Accounting for differences in moisture content of different supplements may seem difficult at first. As an example, what are the steps to take to compare two protein supplements if the protein supplement options are (a) a 30% crude protein cube that is 90% dry matter (DM) and 10% water and (b) wet distillers' grain that is 30% crude protein, 35% DM and 65% water?

Accounting for differences

The easiest way to account for the difference in moisture content is to convert both feeds to 100% DM basis. In this example, if both protein supplements are priced on a ton basis, determine the pounds of actual feed, not water, being purchased by multiplying the total weight by the percent DM. The amount of actual feed of the 30% protein cube that is being purchased per ton is 1,800 pounds (lb.). This is calculated by multiplying 2,000 lb. times the DM content of the cube (2,000 lb. × 0.90 = 1,800 lb.).

To determine the amount of wet distillers' grain being purchased, the same calculation can be used. If the wet distillers' grain is priced on a ton basis, then 700 lb. of distillers' grain (excluding the water) on a DM basis is purchased (2,000 lb. × 0.35 = 700 lb.).

The next step is to determine the amount of actual protein in each of these feeds that could be used as a protein supplement. Both supplements are 30% crude protein on a DM basis. The amount of protein purchased for the 30% cube is 540 lb. and is calculated by multiplying the amount of dry matter times the protein content (1,800 lb. × 0.30 = 540 lb.).

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The same procedure can be used to determine the amount of protein in the wet distillers' grain that is purchased, which figures to 210 lb. of protein (700 lb. × 0.30 = 210 lb. of protein).

After the amount of actual protein purchased is determined, calculating the price per pound of protein is relatively simple. In this example, if the 30% protein cube is priced at $200 per ton, divide price per ton by pounds of protein purchased in a ton on a 100% DM basis. For the 30% protein cube, the price per pound of protein is 37¢ per pound of protein ($200 ÷ 540 lb. = $0.3703). If wet distillers' grain is priced at $78 per ton, then the price per pound of protein is 37¢ per pound of protein ($78 ÷ 210 lb. = 0.3714).

In this example, there is really no difference in price per pound of protein for these supplements. The price of both supplements was priced delivered to your ranch. It is assumed the ranch has the equipment to deliver both supplements to the cows. This is an important consideration in pricing supplements; the ranch has to have the ability to deliver it to the herd.

Other consideration

The University of Nebraska has developed an Excel spreadsheet to help producers determine the cost of feeds on a price-per-nutrient basis. The "Feed Cost Calculator" can be found on the web at *http://westcentral.unl.edu/agecon/.* Click on "Livestock Production Decision Aids," then click on "Feed Cost Cow-Q-Lator." Again, Microsoft Excel is needed to open the spreadsheet. The spreadsheet has instructions, and they can be accessed by clicking on the "Instructions" tab at the bottom of the spreadsheet. Feeds are entered one at a time. To enter the first feed, click on tab "F1." To enter the second feed, click on "F2" to open up a new spreadsheet and to enter information on the second feed. More feeds can be entered by clicking on the "F" tabs at the bottom of the spreadsheet. Inputs for the spreadsheet include:

- What is the price of the feed or supplement?
- The price is for how many pounds?
- What is the dry-matter content?

- What is the nutrient content (percent protein or energy) on a DM basis?

The spreadsheet asks for other items that help in determining true costs on a nutrient basis and include:

- —How far is the feed being transported?
- —What is the cost per loaded mile?
- —Estimate the percentage of the feed that will be lost during hauling.
- —Is there any cost to store the feed?
- —What is the expected storage loss (percentage)?
- —What is the cost to feed this feed?
- —What is the anticipated feeding loss (percentage)?

When the inputs have been entered into the spreadsheet, it will calculate:

- purchase cost of nutrient;
- delivered cost of nutrient;
- feed cost of nutrient; and
- consumed cost of nutrient.

Final thought

As input costs continue to increase, purchasing only feeds or supplements that are needed to fill the "gaps" of the base diet for the cow herd will help keep feed costs in line. The discussion above provides a step-by-step process that can be used to determine the "best buy" when a specific nutrient is needed in a supplement.

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Editor's Note: *"Ridin' Herd" is a monthly column written by Rick Rasby, professor of animal science at the University of Nebraska. The column focuses on beef nutrition and its effects on performance and profitability.*