Ridin' Herd

Part 2: Dissecting a feed tag

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Last month we discussed the "basics" of the content that appears on a feed tag. This month the goal is to get a better understanding of some of the specifics that appear on the tag and application of the information.

Protein content, medicated supplements

The following information appears on a feed tag of a protein supplement. Because the feed is a protein supplement, the name on the tag usually indicates the percentage of protein the supplement contains.

As an example, let's evaluate the feed tag of a medicated protein supplement called Protein Gem Fortifier 32-10 B70. The 32-10 indicates that this supplement is a 32% protein supplement and that 10% comes from a nonprotein nitrogen (NPN) source; therefore, 22% comes from an all "natural" protein source (see the example below). The guaranteed analysis will indicate that this feed has a "Min." (minimum) of 32% crude protein (CP).

As an example from a feed tag:

Crude Protein (not less than)	32%
Protein Equivalent from NPN (not more than)	10%
Amount of Natural Protein	22%

You can determine the proportion of the protein in a supplement that is supplied by the NPN source(s) by dividing the percentage of protein equivalent from nonprotein nitrogen by 2.81 if the NPN source is urea. Urea is 281% crude protein equivalents, so the decimal of 281% is 2.81 (move the decimal two places to the left to convert a percentage to a decimal). The above feed tag is 10% NPN and, again, let's assume that the NPN source is urea, so 10% ÷ 2.81 = 3.55%; therefore, the supplement is 3.6% urea.

To determine the amount of urea that is being supplied, simply multiply the percentage by the pounds fed. In this case, if the supplement is being fed at 1 pound (lb.) per head per day × 0.036 = 0.036 lb. per head per day urea. When supplementing cows protein in range conditions when it is warranted, the supplement should contain only small amounts of urea.

The most common NPN source in cattle feeds is urea. Urea is not protein, but provides a nitrogen source so that the rumen microbes can make their own protein. There are enzymes in the rumen that allow the nitrogen source to be cleaved away from the urea, and the microbes incorporate the nitrogen with a carbohydrate chain to make bacterial protein. A component of all protein is nitrogen.

A question may be, do cattle use the bacteria as a protein source? The answer is yes. The bacteria flow from the rumen to the small intestine where they are broken down by digestive enzymes into amino acids, and the amino acids are absorbed across the wall of the small intestine. In the research world, this is called bacterial crude protein.

We have discussed the concepts of degraded intake protein (DIP) and undegraded intake protein (UIP). DIP is the proportion of the total crude protein in a feedstuff that is degraded in the rumen. This fraction is used by rumen microbes to build their own protein and is later digested by the animal in the small intestine. This is the primary source of protein for most ruminants.

UIP is a feedstuff that is not degraded in the rumen, but remains intact to be digested by the animal in the small intestine. UIP is commonly referred to as "bypass" protein. If a protein source is 30% crude protein and 80% DIP, by subtraction, the UIP is 20% (100% - 80% = 20%; %DIP + %UIP = 100%). Urea is 100% DIP.

The DIP and UIP content of a protein supplement will not be on a feed tag. As a general rule, most of the protein supplement will contain a greater amount of DIP as compared to UIP. However, distillers' grain is an excellent source of UIP and is used as an ingredient in protein supplements because it is 30% crude protein. So the DIP in protein supplements that contain distillers' grain will contain less DIP. But that is OK since these byproduct-based cubes work well as a supplement.

A cube or pellet will not be 100% distillers' grain. Distillers' grains are high in fat, and fat is difficult to cube or pellet. In most cases, a distillers'-based cube will not be greater than two-thirds of the ingredients in a protein cube.

Example

Continuing on with the protein concept, let's assume a producer is considering a 32% protein supplement. This producer has cows grazing dormant range and has determined that there is plenty of forage, and cows are deficient in protein. If the cows are in mid-gestation, how much of a 32% protein supplement does the producer need to feed?

Usually a dormant forage is less than 7% crude protein (dormant pasture and crop residue will often be 3%-6% crude protein), the rumen bacteria are being "starved" for nitrogen and will not break down the forage as efficiently as possible. By supplementing with a protein source, the bacteria will do a more effective job of breaking down the consumed forage, and the animal will get more out of the forage.

In addition, as digestion of the forage improves, cows will consume more forage and, in this scenario, the supplemented cows will also get more energy from the diet.

As an example, a 1,200-lb. cow grazing unsupplemented dormant Sandhills range in Nebraska will consume about 1.8% of her body weight on a dry-matter (DM) basis, or about 22 lb. of range daily. If the forage is 5.5% CP and her protein requirement is 7% CP in the diet, she is deficient. She needs to consume 1.54 lb. of protein daily, and she is getting 1.21 lb. daily. She is therefore deficient 0.33 lb. per day. The pounds of supplement needed per head per day of the 32% protein cube is 1.03 (0.33 lb. ÷ 0.32 = 1.03 lb.). Supplements are about 90% dry matter (DM), so the producer would deliver 1.2 lb. per head per day on an as-fed basis (1.03 lb. ÷ 0.90 = 1.146 lb.).

The "B" on the feed tag mentioned at the beginning of this discussion denotes that the feed contains the ionophore Bovatec (Lasalocid) and that the concentration of the ionophore is 70 grams per ton of feed. The inclusion of the Lasalocid is the reason the supplement is tagged "medicated."

Final thoughts

We revisited some protein nutrition concepts and discussed how the information on the feed tag can be implemented in a feeding situation. Next month we will discuss fat, fiber, and mineral and vitamin components of a feed tag.

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Editor's Note: *For part 1 of this series on reading a feed tag, see the June 2009* Angus Beef Bulletin EXTRA.