

Straight to the Bottom Line – October 1, 2011

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## **Determining the value of byproduct ingredients**

This has been the year of creative ration formulations. With the recent high prices for grain type ingredients and the limited availability and high price of forages, nutritionists have been challenged to look for angles for input cost management while still maintaining milk production. Unlike 2009, high milk prices have required us to maintain rations that support high milk production while managing cost. However at some point, there is only so much you can do.

The realities of the markets for both feed and milk dictate your options. When feed/milk margins are tight, there is often pressure to utilize a variety of byproduct ingredients. In view of the tight forage supply, it is also common to receive pressure to replace roughage from forage with fiber from grain byproducts.

In many cases, byproducts do offer advantages and need to be considered. There is skill required, however to be sure all issues are being considered. If pricing and availability were always in our favor, we would probably feed fewer more highly concentrated grain products that leave lots of room for a generous amount of high quality forages. But, since we don't live in that perfect world, we need to be skilled at evaluating the usefulness of these byproducts in a variety of situations. And in nearly every case, if they don't either save feed cost or solve a supply problem for a more desirable ingredient, you would probably choose to not feed them.

Let's first consider the reason why these are considered byproducts. In nearly every case, the ingredient is the result of a process of removing a higher value ingredient like starch, sugar, protein and oil or a combination of these from a plant product. In the realm of removing starch and or sugar from grains, the resulting byproduct is higher in protein, fiber and usually fat. Removing oil from oilseeds results primarily in an increase in the protein and fiber content.

One issue to consider is the type of starch removal from the grains. The resulting byproducts differ in their starch level due to the type of processing involved. In some instances, nearly all of the starch is removed and in others a surprisingly high level of starch is left in the byproduct. With starch being an expensive commodity of late and a key driver in dairy ration formulation, the resulting starch level is very important in determining value.

Since all of these byproducts will be higher in fiber than their source ingredients, it is wise to wonder about the digestibility of that fiber in the rumen. There is a wide range of fiber digestibilities in these ingredients. The reason for this is the various chemical structures of the fibers they contain. Some of this fiber may act more like the fiber in poor quality hay while other fibers can be very readily digested in the rumen. So, just looking at the fiber value of a particular byproduct doesn't tell you much at all. Then there is the question related to using the fiber in these ingredients to replace fiber from forages. The answer to this question depends on many other contributing factors, but to be sure, many a cow health issue had its origin in a mistake made on this question.

Let's don't forget the potential negative from high levels of certain nutrients or compounds as the starch, oil, sugar and protein component is removed. Just like fiber, protein and fat are concentrated by the removal, certain minerals and even mycotoxins could be concentrated to levels that can cause cow health issues. Just remember that any portion of the source ingredient that is not removed in the initial processing will remain at a higher level in the byproduct. There are even potential environmental issues related to high feed rates of certain byproducts that have very high levels of certain minerals that can accumulate in the manure and then the soil.

As you can tell, there are numerous issues to consider when you begin to utilize these various byproducts. Most all of these issues are easily overcome by doing your homework. As well, there are several companies that do a fantastic job in taking these byproducts and making them into value added co-products and have already addressed potential concerns.

In next month's column, we will review a few of these byproduct looking at where they come from and how that impacts their value in dairy rations.