Straight to the Bottom Line

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4/1/13 Rebar for the Rumen: Part 2 of a Discussion of Straw in Lactating Dairy Diets.

In the column last month, we discussed the use of wheat straw in dairy diets. Including such a low digestibility ingredient in the diet of a high producing dairy cow is often questioned. In a diet where space for digestible building blocks for milk is so limited, why would we waste some of that space with an ingredient with such low digestibility? Since we do use straw often, I thought it would be good to offer a defense of our position. In short, this defense relates to the fact that the dairy cow was created to eat diets more like those of a beef cow grazing native grass. However, the energy demands of this milk cow approach those of a feedlot steer on a low roughage diet. This is the balancing act required to support good milk flow while supporting a healthy rumen. It is that balance that often makes straw a good fit. It uniquely supplies some "rebar for the rumen", helps keep the cow healthy and intakes in check.

When diets are built, in addition to formulating for various nutrient concentrations, we also have to consider the physical form of the diet. We attempt this on paper with a nutrient called physically effective NDF (peNDF) or effective fiber NDF (eNDF). Different nutritionist and various nutrition models may call these slightly different names and may even calculate them differently. However, the principle is the same. We know that NDF is the major fiber measure in a diet. The goal in eNDF is to estimate how much of that NDF is long enough to have an impact on rumination and rate of passage. This is a subjective measure at best and still needs to be confirmed by regular shaker box analysis of the resulting diet. While keeping its limitations in mind, this is a good measure to use in formulation.

In addition to using eNDF as a nutrient measure to help insure good cow health, it is also a tool that has strong economic considerations. Rations that are correct in eNDF levels tend to have better feed efficiency. Due to the impact of eNDF on rate of passage, it will have an impact on the amount of feed consumed to produce the current milk production. In view of recent cost per pound of dry matter landing at or above 14 cents, getting the same milk with less feed is crucial.

For a real life example, if you have a herd of cows producing 75 pounds of milk with a whole herd dry matter intake of 55 pounds you might wonder if efficiencies could be better. And upon further inspection of the diet, you find that the eNDF of the diet is only 18%. As well, after doing a shaker box in the bunk, you find only 3% on the top shelf and maybe 32% on the second shelf. Though the producer may be satisfied with 75 pounds of milk production, the question is can he get that same production with a couple of pound less feed. If so, he could net 30 cents per cow straight to the bottom line. In the example diet mentioned, perhaps straw could be added to increase the eNDF a couple of points and maybe add some material to the top shelf. At the same time, looking at the loading order of corn silage and alfalfa hay in the mix may offer

a hint on how to move some roughage from the third to the second shelf. It is not at all unreasonable for changes such as these to net the dairy as much as 30 cents margin per cow. As an added bonus, cow health might improve as well.

So, if you use straw to achieve it or not, we must feed rations that have the correct combination of forage length and NDF content. The marriage of these is called peNDF or eNDF. Since different diets have different NDF levels, the resulting shaker box goals are different too. Some rations need to be longer and some need to be shorter. Getting these two measures out of balance in the ration can result in either poor economic feed conversion or poor cow health. Considering the tight margins we operate under in this industry, these are two ration metrics you must have in check. So, go ahead and get that shaker box out and start shaking!