

Straight To Your Bottom Line

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11/14

Maximizing the Value of Corn in Dairy Diets

A picture is worth a thousand words. That old saying hit home with me this past week as I walked through two dairies kicking manure piles. Like many other dairies, these two dairies are nearing the end of last year's corn silage inventory. With the fermentation long completed, these dairies are able to reap the benefits of feeding very digestible silage. It just so happens that both of these dairies also grind corn on-site. So the question became, why is there much more corn in the manure at one dairy than there is at the other? Obviously we can discuss many factors in the ration that would affect starch degradation. For the sake of this discussion and because it is the most influential aspect, we are going to focus only on the actual processing of the corn prior to feeding.

How many times have you heard a nutritionist, a feed professional or agronomy consultant drive home the importance of kernel processing in corn silage? Or hear them bemoan the fact that the ground corn is too coarse? How much does it really matter? Back to the two dairies; after taking samples of the manure and washing it through a screen, my initial evaluation of the feed ingredients was reinforced. The dairy that had better kernel processing in the corn silage and more finely ground dry corn also had significantly less corn passing into the manure.

The other difference in the two corn silages was the moisture level. The ration resulting in more complete corn kernel digestion had the wetter silage. Corn silages with dry matter values in the lower 30's tend to feed better than those with upper 30's dry matter content. There are a couple of things at work there and they are also related to the kernel processing. When these partial corn kernels arrive in the rumen, they must be hydrated by rumen fluid to begin the fermentation process. If the kernels are already somewhat moist from the pile, the hydration process in the rumen is quicker. There is only a limited amount of time that this kernel can stay in the rumen before it is passed into the hind-gut and then likely into the manure. If this fermentation process is delayed, they may avoid good rumen fermentation.

The second principle is that in most cases wetter corn silages were harvested at lower maturity levels. The younger and more tender kernels are just easier to process than the older, harder and more mature kernels. This less mature silage may yield less tons per acre and also contain lower starch values. But, with the better digestibility of a younger stalk and the ease of processing a less durable kernel, the less mature harvest point might yield more milk per acre. What then is the lost value of that corn passing through?

High producing cows are going to try and keep eating until they meet their energy requirements. In doing so, one of the results is a higher rate of passage than a beef cow of the same body weight. This puts poorly processed corn kernels at risk of passing through the rumen undigested. As the cow strives

to meet her high demands for energy while consuming a diet with average or poor starch availability, intakes can at times be too high. Feeding a highly digestible ration with high starch availability helps to enhance overall feed to milk conversion efficiency. This matches the overall goal of converting feed energy and dietary protein to milk fat and milk protein at a high level of efficiency.

If efficiency is reduced it makes it more costly to produce sellable product. Let's look at a specific example. Assume that poorly processed corn reduces starch digestibility 10%. In response, we must feed 10% more corn to supply the same amount of energy needed from nicely processed corn. If we roughly assume 15 pounds of corn consumption per head, either through silage or grain, that results in an additional 1.5 lbs of corn that needs to be supplemented to make up for poor processing. At \$200/ton corn that is \$.15/hd of additional and unnecessary cost, or an approximate 2.5% increase in overall feed cost. That extra investment adds up to \$45.75 additional cost per head per year due to poorly processed corn.

Obviously the above example is not based on science or research, rather a general observation to loosely illustrate the economic impact of corn processing. Technology is improving and our ability to process whole kernels of corn into more digestible pieces is getting better. Thus, the opportunity to feed corn starch that is easily degraded by the rumen bacteria is also improving. Don't miss this opportunity. Make sure you are taking advantage of available technology, because the results go Straight to YOUR Bottom Line.