

MUN REDUCTION ISN'T JUST ABOUT PROTEIN

MUN reflects what is actually happening in the rumen and is an excellent and inexpensive way to help monitor the balance and efficacy of the feeding program. Consider using MUN to help ensure your feeding program is working as it should.

The following article from June 2011 Hoards Dairyman, by Linda Baker and Robert Munson, Staff Veterinarians, School of Veterinary Medicine, University of Pennsylvania.

Milk urea nitrogen (MUN) concentration is proportional to urinary loss of N (nitrogen) in dairy cattle. While dietary protein seems to have a good handle on MUN levels, it is not the only factor. For over a decade, faculty and staff at the University of Pennsylvania's School of Veterinary Medicine, Centre for Animal Health and Productivity (CAHP) have been involved in ration formulation to reduce MUN and N (and phosphorus as well) excretion while maintaining or enhancing productivity.

MUN targets should be less than 12mg/dl and we often find high producing herds between 8 and 10 mg/dl of MUN. Often, excess soluble protein plays a significant role in raising these numbers. However, increasing available carbohydrate in the rumen can modify the effect of MUN by conversion of excess rumen N into microbial protein.

The accompanying charts are two examples where increases in rumen available carbohydrate, in particular starch availability, reduced the herd bulk tank MUN.

We visited a 350 cow herd in early 2009. The amount of digested corn kernels in the manure caught our attention. We suggested that the producer reduce the grind size of dry shelled corn. The suggestion was implemented on February 18. Two days later, bulk tank MUN dropped from roughly 16mg/dl to 12mg/dl (see Figure 1).

The 4-unit reduction in MUN equals a drop in urine N of 50 grams per cow per day which would add up to a stunning 11,686 pound reduction in urine N per year for the herd. This drop in MUN demonstrates a dramatic improvement in nitrogen utilization on the herd level.

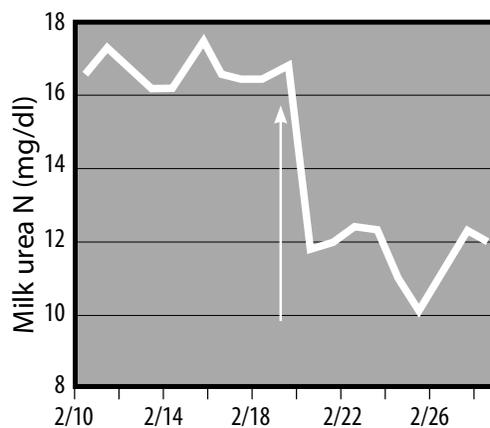


Figure 1: MUN dropped with finer grind dry shelled corn

On the production side, there was an accompanying 2.5 pound gain in milk production. Just one week later, an additional 1.5 pounds were gained. If this herd maintained a 2-pound response for the year as a result of this management decision, it could yield more than \$30,000 of additional income.

A CHANGE IN SILAGE

The second case involves a change of silage on another farm milking 130 cows. This herd took advantage of a new variety of corn silage available in March 2009. The new silage was included in the total mixed ration (TMR) at the same feeding rate as the variety previously being fed. Following the change, the MUN dropped from around 14mg/dl down to a range of 10 to 11mg/dl (see Figure 2).

The equivalent urine N reduction would be at least 37 grams per cow per day which would amount to 3,307 pounds per year for the herd.

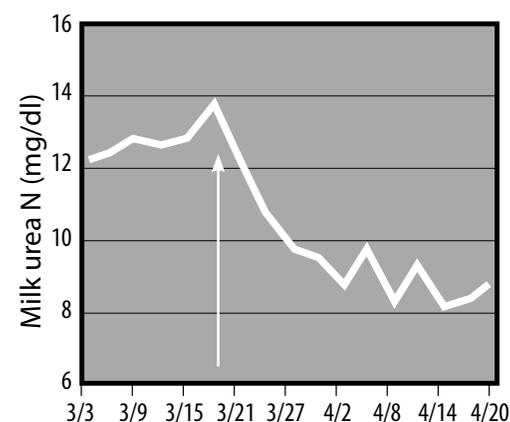


Figure 2: MUN dropped when fed a different variety of corn silage

Nutrient analysis of the corn silages revealed neutral detergent fibre (NDF) decreased from 46 percent to 35 percent and starch content rose from 29 percent to 41 percent from the old to the new variety of corn silage. The decline in MUN is a result of dramatic increase in rumen available starch and corresponding improvement in rumen nitrogen utilization.

On the production side, there was an initial increase in milk production of 3 pounds per cow followed by an additional 2 pounds per cow the following week. Milk production responses of this nature have a significant economic advantage to producers as marginal revenues greatly exceed the marginal costs of production. If this herd could maintain a 3 pound response for the year as a result of choosing corn silage varieties with more available starch, greater than \$20,000 of annual milk income would be realized while concurrently reducing N excretion from the cow.

