KIRKTON
BOVINE SERVICES

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# DAIRY NEWSLETTER

## Milk Urea Nitrogen (MUN) Testing

As many of you may have noticed on your pickup reports from the website, the DFO has started measuring bulk tank MUNs with every load of milk. This value is reported alongside the component information and has been the source of multiple discussions on farm with many producers lately. With any new routine test, it is important to take some time to see where the baseline for each herd is going to settle out. Here are a few points about the testing and results that will aid in discussion with all team members (vets, nutritionists, feeders etc).

***What is MUN anyways?***

Milk Urea Nitrogen is just that, urea that is being excreted in the milk. It correlates very well with blood urea nitrogen and equilibrates very quickly across the blood-milk barrier. MUN is not an accumulation of all the urea that has been made in the past 'x' number of hours since milking as it diffuses very easily back and forth. Urea is constantly being made in the liver from excess nitrogen ($NH_3$) that escapes the rumen as a result of breakdown of dietary components. It is recycled in the saliva to go back into the rumen for use by the rumen microbes and any further excess is excreted in the milk and urine. The MUNs will peak about 4-6 hours after feeding, are higher during the summer months and lower on 3x herds and morning tests (for DHI individual tests).

***So What Does it Mean?***

Based on historical data on herd MUNs any level between 8-16 can be considered 'normal' for a herd. Currently most people are accepting 8-12 as a safe level. As many more rations are balanced for protein levels using amino acid or metabolizable protein models the amount of excess protein being fed is less likely. Previous ration formulations calling for 18%+ crude protein have been reduced to around 16% or less. The 2 sources of protein that a cow receives from her diet are from the microbes doing their job in the rumen that are then flushed into the abomasum, and the bypass protein that is absorbed in the small intestine. It is actually a very complicated way to do it, but the cow seems to get by if everything is balanced and delivered according to plan! It is thought that if your dietary protein is too high, the herd MUN will be high; and conversely if dietary protein is low the MUN will be low. It would be nice if this were true all the time, but there are many factors that will alter the protein metabolism in the rumen of the cow. Included would be ration mixing, timing and frequency of ration delivery, dry matter changes etc.

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***What About Starch?***

We're glad you asked! The biggest part of protein metabolism that will influence MUN is the availability of carbohydrate in the rumen alongside the availability of protein. The rumen microbes need the nitrogen to make their own amino acid profiles and to reproduce. They need the energy source to work their amino acid machinery and to reproduce. If we short the energy there will be more nitrogen escaping the rumen. The trick is to match the availability of starch and protein to be around at the same time for the micobes to use to their fullest potential.

***When and What Changes Do We Make?***

If the herd has 4% butterfat, 3.3% protein and a 34+Litre average but a low or high MUN should anything be done? What about a herd at 4%+ butterfat, low protein and low MUN?

The bottom line would be to wait to ensure that the baseline for your herd has been established. Ideally there should be roughly 4-6 weeks of data accumulated before any major changes are made. If your herd level MUN values change by more than 2 points for more than 2 pickups you should probably look at dry matters or what other changes have been made. High MUNs are thought to have a negative effect on cost of the ration, embryonic viability and energy cost to excrete the excess. Low MUNs are thought to suggest that there is more money to be gained by increasing protein or starch (or both!) in the ration.

At the end of the day, take a look at the MUN levels for your herd and talk about it at the next visit with your veterinarian and nutritionist. If you are unhappy with your MUN and fat/protein component levels it may be a good time to have all your team advisors together to derive a plan of attack. All of this after first cut of course!

***Happy Haying!***