

Fine tune Feed Management with MUN Testing

by George Cudoc

Routine Milk Urea Nitrogen testing offers opportunities to improve milk production while controlling feed costs. Individual cow MUN testing gives us target areas in the herd where protein to energy balance may not be correct. Reacting to the MUN data our cows provide can help avoid under feeding protein in relation to the energy supplied from carbohydrates and thus maximizes production from our cows. This is typically seen as low MUN levels. On the other hand, we sometimes provide more protein than needed by our limitations in supplying enough carbohydrates causing MUN to be high.

There are things we can check if MUN levels do not fall into the 10-14 acceptable range. Some are listed here.

1. Diet balance vs. actual production. We sometimes add the challenge factor when balancing diets that may be beyond what is realistic and cows excrete protein and MUN goes up.
2. Drops in intake due to many factors can drop nutrient intake and MUN may drop.
3. Knowing what makes up the diet by analysis is necessary to use MUN values to manage feeding. Routine forage analysis and mixing recipes as prescribed is a must. MUN values different than expected may be telling us diets are not meeting the specifications we wish for.
4. Finally, what I see most are situations where all of the above scenarios are handled but what the cow eats is not what we planned. Sorting feed due to improper particle size or improper diet moistures lead to MUN numbers out of the target range and spread wider than we should see from cow to cow.

Let's look at a dairy situation where MUN testing and evaluation led to looking for better feed management strategies and herd improvements. We will start with some parameters we chose to track at the beginning of the period.

*385 Holsteins • 2 Brown Swiss
TMR / 4 Group Feeding / 6 Row Free Stall*

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|--------------------|--------|-----------------|-------|
| • Daily Milk | 72.6# | • % Fat | 3.6% |
| • Mature Peak | 107.0# | • 1st Peak | 84.0# |
| • Persistency | 98% | • Days 1st Bred | 113d |
| • 1st Conception | 19% | • MUN Avg. | 10.9 |
| • MUN Dist.(10-14) | 46% | | |



These are the goals we set as we worked with the herd.

- Increase Production
- Use MUN to Guide Diet Balance
- Evaluate Grouping Procedures
- Evaluate Feed Management Practices
- Increase Bottom Line

The first test day in the 6-month stretch we worked with the herd showed the average MUN to be 10.9. Most people might be willing to stop here since we achieved our first objective of having the herd in the 10-14 MUN range. As we looked deeper we noticed that the ranges of MUN were wider than our goals of +/- 6 from average. Each lactation group showed this trend but the first lactation group was by far the widest. Another trend that we noticed was that within each pen being fed the average MUN increased slightly as cows within that pen increased in days in milk. This is a normal trend for TMR feeding but the difference here was that the highest MUN was in pen 1 cows which was a post fresh group and fed their own diet balanced higher than the other groups. Each diet fed to all 4 groups showed this same pattern of high to low MUN as days in milk increased, and the average milk pound diet balance and MUN were as follows.

- Pen 1 @ 90# Milk with 14.2 MUN**
- Pen 2 @ 80# Milk with 13.9 MUN**
- Pen 3 @ 60# Milk with 11.1 MUN**
- Pen 4 @ 45# Milk with 8.9 MUN**

After thorough examination of the data, we went to the barn. Looking for animal behavior and management practices that help explain the data is a must if we are to implement changes that will net us different results. Several observations were relevant to the MUN data we were seeing. Each group had some level of animal density that exceeded feed bunk space due naturally to 6 row barns. We also noticed that in each pen there was no feed for about 20 feet at each end of the bunk. Animals had to wait their turn to get to the bunk and more often than not the animals waiting were mostly the first lactation animals. This was especially true in pen 1.



We also had the opportunity to examine the feed cleaned up from the previous day. It was pretty obvious cows had sorted what they wanted and what was left had little of the properties of what was just delivered. This made us think about, "what if the feed is sorted before the cows waiting for a spot at the bunk get to eat". We went back to the bunks and as cows were filled and left to rest we noticed that the reachable feed now looked different than that nosed out of reach. Sorting did appear to begin with the first wave of eaters.



We next walked the pens paying attention to manure consistency. Each of the pens showed similar levels of corn particles passing through the digestive system and out with the manure.

Our plan of action can be classified in two categories. We implemented diet changes as well as feed management strategies.

As for the diet changes, we used our observations about the manure in relation to what MUN told us to make three changes.

1. Reduce corn grain feeding.
2. Reduce corn particle size by grinding finer.
3. Increase soluble protein levels.

Feed management changes were highly influenced by the desire to tighten the MUN ranges and reduce the number of cows outside the target MUN range.

1. Reformed group strategies to include a first lactation group.
2. Initiated a single diet TMR for all groups.
3. Delivered and pushed up feed more frequently as well as dispersed feed to the whole bunk.

After 6 months of these changes we measured the impact.

• Daily Milk	72.6#	78.3#
• % Fat	3.6%	3.74%
• Mature Peak	107.0#	109.2#
• 1st Peak	84.0#	87.8#
• Persistency	98%	104.4%
• Days 1st Bred	113d	104.6d
• 1st Conception	19%	24.8%
• MUN Avg.	10.9	13.0
• MUN Dist. (10-14)	46%	68%

Our MUN still remains in the acceptable 10-14 range. The most important observation here was the dramatic increase in the number of cows in this proper range. This last in a series of MUN articles hopefully has demonstrated the value in using MUN data to evaluate your feeding management. Going beyond the average MUN value for the herd can pay big dividends. Individual cow MUN data can give us a more specific target information for improvement and avoid missing opportunities even when the herd average is okay.