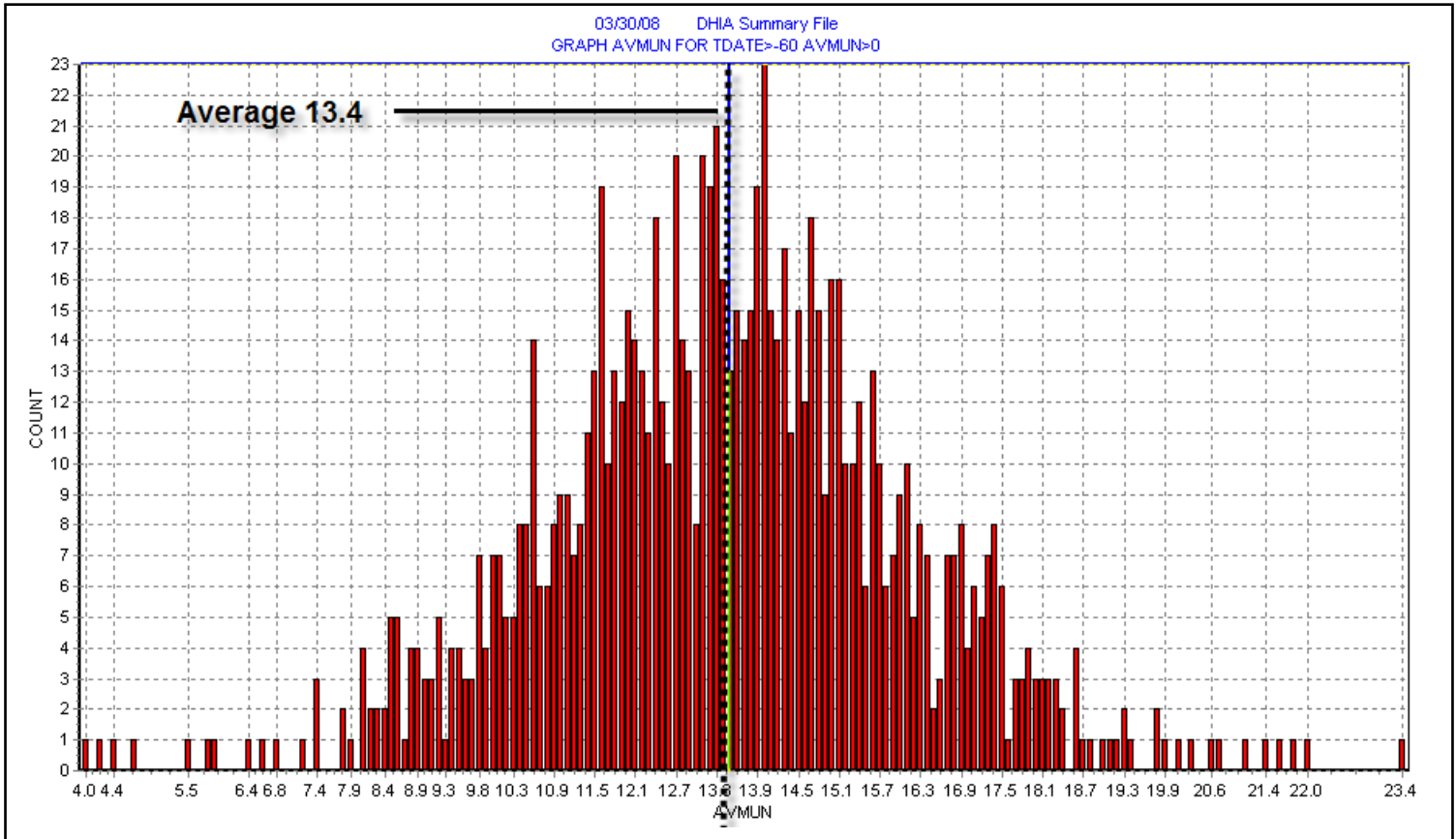


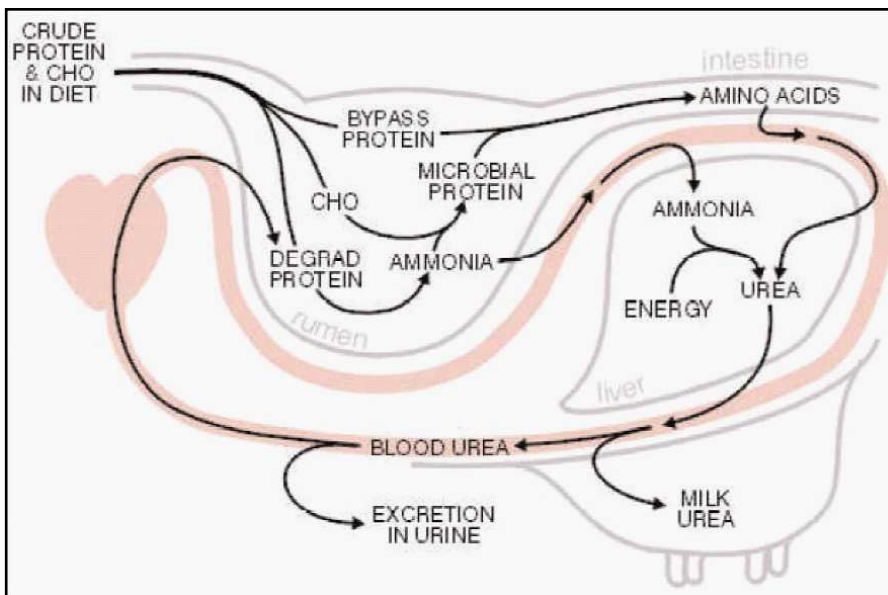


The Dollars and \$ense of Milk Urea Nitrogen

Balancing the increased milk price with increased input costs remains the focus for dairy producers.



Milk Urea Nitrogen (MUN) testing is increasing in popularity as one method used to fine-tune rations and control dietary input cost. Bulk tanks are tested routinely to establish baselines for herd performance and alert us to changes in protein utilization when they occur. Individual cow MUN testing can provide useful data on how to fine tune diets for the greatest protein efficiency within a herd or feeding group. One of every 4 herds tested by Dairy One test individual cows for MUN on a monthly basis.



MUN is a test performed on a milk sample and is correlated to urinary excretion of nitrogen. Normal MUN levels for Holsteins is 10-14 and high protein breeds like Jersey and Swiss tend to be 1.5-2.0 higher. After a cow consumes protein, some of it is degraded to ammonia in the rumen. The portion of this ammonia that cannot be converted to microbial protein by rumen microbes will be converted to urea and absorbed into the blood and eventually excreted in the urine. Higher blood urea nitrogen and urinary nitrogen is mirrored by higher MUN and thus we know that protein being fed is wasted when MUN is elevated. When MUN values are low we know that microbial protein will be reduced limiting milk and milk protein yields.

Estimating the economic impact of changes in a ration is necessary to generate the greatest possible return when feeding cows. Work from Wisconsin

has given us a tool to estimate the urinary excretion of nitrogen by using MUN and body weight.

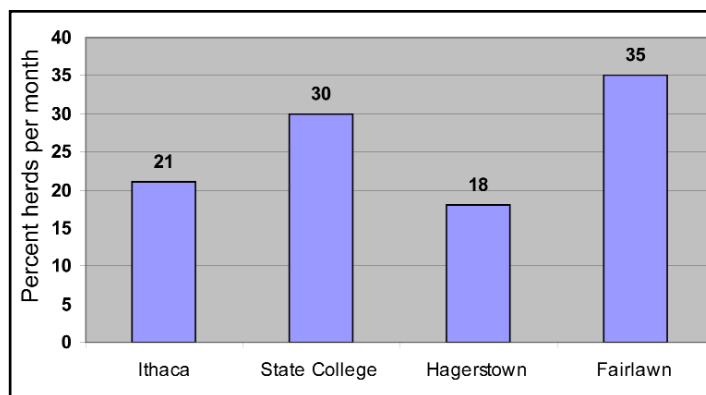
**Urinary Nitrogen =
Body Weight x 0.0129 x MUN(mg/dl)**

A Holstein cow weighing 1400 lbs. and testing 16 MUN would be excreting about 290 grams of urinary nitrogen. Making dietary changes that would improve the protein use and reduce MUN to 12 (mid-range normal) would reduce this urinary nitrogen to about 220 grams. Nitrogen multiplied by 6.25 will convert this 70 gram reduction to 440 grams or 1 pound of protein. This is equivalent to about 2 pounds of soybean meal equivalent.

Dietary changes that should be considered involve protein level, protein type, or carbohydrate level. Simply too much protein will lead to protein waste and higher MUN by flooding the cow's digestive system with nutrient she cannot use. Worse yet is the fact that she will spend energy other wise used for milk production to rid her system of this unneeded protein. The wrong kind of protein will have a similar affect. Overfeeding rumen degradable or soluble protein regardless of the level of crude protein will also increase excreted urinary nitrogen. Too little fermentable carbohydrates will increase the amount of protein not being used. Starch, sugars, and digestible fiber need to be in adequate supply for maximum production of rumen microbes. You can think of this relationship between protein and carbohydrates much like the air and fuel mixture needed by a farm tractor. For a balance between power and efficiency the two must be supplied in the proper ratio. Too little of one may reduce power, i.e. limit milk production . Too much of one may burn rich and increase exhaust i.e. raise excreted nitrogen.

We are fast approaching a time when MUN levels can suddenly change. Major forage changes such as cows going to pasture or ensiling new hay crop in the spring can alter the protein level and type we are feeding. Getting advice from a nutritionist to control these changes will help maintain the proper balance as indicated by MUN measurements. Pasture can be very high in total protein and may raise MUN. Sometime we are caught off-guard and regard some of our feed management changes as minor. The cows are quick to point out by way of MUN measurements whether we were right or wrong. Changing the grind of our grain can change MUN tremendously by changing rates of available fermentable starch. Finer processing of grains tends to lower MUN much like processing corn silage. Changing the ratio of hay silage to corn silage as we come into new crop this spring can raise MUN significantly. Changing from dry alfalfa to wet fermented bales or ensiled silage even though the crude protein level is the same will also raise MUN. As feed ingredients fluctuate in the market be careful to consider not only the crude protein level but the degradable level as well. Looking for alternatives to dry corn like using corn distillers will raise MUN as the level of fermentable carbohydrates will be much lower with the distillers.

**Percent herds tested for
MUN monthly by Dairy One labs.**



The strategy for using MUN testing should include bulk tank MUN to allow you to notice changes in ration or feed management that are not always caught otherwise. Test whole herd MUN for individual cows and follow these guidelines.

1. Establish the average for the herd. Target should be 10-14 MUN. Fine-tuning may push levels lower without incident if you have good controls in feeding.
2. Look at the range for the herd. Within a herd or group fed the same diet, the difference should be +/- 6 from the average. Look for sorting and other feed management compromises if greater.
3. Look at differences between groups. Do the differences reflect diet differences? Are we feeding all groups correctly?
4. Look at the differences between lactation groups. Lactation 1 animals tend to be slightly lower in MUN.
5. Look at the differences between stages of lactation. MUN may increase slightly for cows fed the same diet as DIM increases.

For more information about any Dairy One products or services, please call 800.344.2697 or email: dmr@dairyone.com

You can also visit our website at www.dairyone.com