

dhia

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STATE COLLEGE (Centre Co.) — What should you expect from MUN (milk urea nitrogen) values as you pasture your cows? Should rations be changed as we enter the pasture season?

These are two important questions that need to be addressed to implement pasture usage in our dairy cows' diets.

As always, every farm has unique management applications in feeding dairy cows. What is important, is to recognize the driving forces in milk production and how best to implement these on each farm.

Using two measurable components in our diet, such as percent soluble protein and percent starch, we can maintain a similar rumen environment, as we experience changes in our farm feed supplies, or in the need to change feed sources for the rations.

More specifically, we compare our TMR nutritionally with what replaces it in the four- to five-hour pasture period.

To do this, dry matter, (DM) intakes before and after the pasture season starts must be known.

Before pasture:
DMI=49.5 pounds DM TMR

After start of pasture:
DMI=47.5 pounds DM TMR
?DM Pasture

We assume at this point, that the grass DMI is two pounds DM at minimum. From knowing that the better the forage quality, the greater the intake, we actually allow for a 3-pound DMI of pasture.

Let's now compare the two diets:

TMR	
%CP	16.5%
%SP	31.5%
%Starch	30.4%

At 49.5 pounds intake, 1,169 grams of soluble protein is provided and 15.05 pounds of starch, the ratio of grams soluble protein to pounds starch is 77.6. This falls very nicely into the range that on this farm has been established as acceptable using test levels for MUN and other milk components.

Now look at what occurs in a pasture situation.

Pasture	
%CP	28%
%SP	25%
%Starch	0%

When two pounds DM pasture

replaces two pounds DM TMR, an additional 1,184 grams soluble protein, and 14.44 pounds starch are provided, calculating out to a ratio of 82.

This change is probably not going to affect the cow a great deal at this point. During times when we have very high soluble protein levels in our haylage, pasture can be used as a dilution, because fresh forages tend to have a lower percent of soluble protein than ensiled feeds.

When the need arises, or should I say, when our cows choose to eat more pasture than the above example, we reevaluate and make further changes.

For example, at five pounds DM intake of pasture (1,208 grams soluble protein and 13.5 pounds starch) our ratio would be 89.48. We have found this higher ration falls outside of the range of 75 - 85, where our cows function best, and so some adjustments need to be made.

What are some of these adjustments? This is the difficult part because there are many ways to change this ratio back to within 75 to 85, but only a few ways can maintain rumen health.

The first obvious change to try is to increase the starch (or carbohydrate) content of the ration. Generally, in high-producing

groups or herds, this is not a good choice because cows are already maxed out. You and your nutritionist need to look to see if this is a good choice. It would require an increase in starch to 31.9 percent in our TMR to get back to a ration of 85.

Another change we may try to substitute TMR ingredients to lower the soluble protein percentage. Again, care should be taken. To obtain an 85 ratio in our cows' diet we need to lower soluble protein to 30 percent. This may only be accomplished by substituting with some very high bypass protein ingredients that are generally very expensive.

The way we have maintained a healthy rumen environment during pasture season has been somewhat controversial.

Crude protein percentage is what we change to maintain a 75 to 85 soluble protein-to-starch ratio.

In the example TMR and pasture we have been following, we lowered the TMR crude protein to 14.5 percent which resulted in a ratio of 80. Milk production did not suffer, MUN values stayed near 11 to 12, and our cows appeared quite healthy.

This has been the third summer in which the diets were successfully adjusted for pasture.

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Optimum milk output is always driven by optimum rumen function and output. Feeding rumen bugs should always be our number one consideration whether we cafeteria-style feed our cows, provide a TMR, pasture, or any combination of these.

At our farm, we feed a 100 percent pure TMR from Dec. 1 through April 1. What happens after April 1 could and would affect our cows if we didn't address what changes take place.

First of all, our main intention is to provide outside, off-concrete exercise April through November.

This is best accomplished by our 40 acres of bluegrass pasture for our 160 cows. This provides a clean environment, ample water, fresh air, and nutritious feed, and a comfortable place to rest four hours a day.

These also happen to be the same goals in our free-stall barn, for the other 20 hours.

We address the differences in nutrition between TMR and grass, on our operation.

When we balance our TMR we are mainly concerned with maintaining a critical relationship between rumen degradable protein and rumen degradable carbohydrates.

The correct blend for us has been established using pounds of milk, percent crude protein, percent butterfat, MUN and percent true protein.

Averaging over 80 pounds of milk on twice-per-day milking and maintaining healthy fertile cows presents quite a challenge to not upset the rumen function.

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