

Martha Hoffman

Graze magazine news story

It was sort of a “man bites dog” story this spring: grazing dairies that often struggle with high protein levels in their pastures were seeing just the opposite in their Milk Urea Nitrogen (MUN) readings during the height of the spring flush.

MUN readings of 2–4 milligrams per deciliter — and some even lower — were being reported this past spring across a broad swath of the nation.

MUNs in the 8-14 range are generally viewed as acceptable, and dairy graziers often see higher numbers on spring pastures due to excessive protein in the lush grass. It is well known that high MUN numbers indicate an imbalance of protein and energy in the diet, which can lead to reduced milk solids production and a variety of herd health problems.

But what about very low MUN readings? Values below the 8-10 level indicate a dietary protein deficiency that may result in reduced milk and protein production, although the linkage here is less clear compared to what is known about the effects of too much nitrogen.

A weird weather spring

Various theories have been proposed for the spring’s low values, but there seem to be no definitive answers at this point.

Karen Hoffman, New York State NRCS grazing specialist, thinks the spring’s lower MUNs were caused by cloudy, rainy weather that meant although there was likely less sugar (and therefore less energy) in forage, possibly the plant fiber was more digestible, enabling the cows to obtain more energy from digestion of the fiber. This could lead to better protein use, as fiber-digesting rumen bacteria aid other types of bacteria with protein breakdown and utilization.

In other words, the cows were digesting the protein more efficiently, so it was not showing up in their bloodstreams and MUN readings.

Silvia Abel-Caines, Organic Valley ruminant nutritionist, notes mineral deficiencies are a potential cause as well.

“Forages with lower levels of critically important minerals required for building complete plant proteins (magnesium, cobalt, copper, sulfur) may result in lower protein level forages,” she said.

Many others weighed in on the subject on ODairy, an email listserv hosted by the Northeast Organic Dairy Producers Alliance (<http://listserv.nodpa.com/cgi-bin/wa?HOME>), and while the consensus centered on the spring’s cold, wet weather, the exact causes were a matter of opinion.

Jerry Cherney, professor of soil and crop sciences at Cornell University, saw many low crude protein tests in grass and alfalfa samples this spring, and he thinks this is the major factor in low MUN values.

Tom Thomson of Northwest Agricultural Consulting suggested that low MUNs are a result of reduced nitrogen in soils caused by saturated, warm soils that allow nitrogen to escape into the atmosphere, making them no longer available for the pasture plants. He said soil testing could confirm this.

Fay Benson, Cornell Cooperative Extension grazing educator, suggested that low soil temperatures could slow soil microbial activity, preventing nitrogen from getting to plants.

Heather Darby, agronomic and soils specialist for the University of Vermont Extension, had a similar conjecture.

“The growing conditions this early season were cold and wet, likely leading to some slow uptake of nutrients in the plants,” she said.

A source of concern?

How serious were these ultra-low MUN readings?

Greg Brickner, a staff veterinarian with CROPP/Organic Valley said he saw lower milk protein in a few of the low MUN herds this season. However, some of the herds did not see reductions in milk protein, so his opinion is that low MUN values are not a concern from a dietary perspective unless other red flags are present. Brickner, who is based in Wisconsin, said that the low MUNs lasted about three weeks before returning to normal in June.

Hoffman agrees that low MUNs do not pose a serious problem if the cows are still producing well with normal protein values.

Should dairy graziers take any action when their MUN numbers are very low?

Brickner suggests increasing protein in the ration could help raise MUNs in a spring like 2019, even though this is contrary to normal grazing management.

“The usual response would be to add soybean meal or some other high-protein supplement,” he explained. “Keeping in mind butterfat and a stable forage-based rumen, I would first see if there is an opportunity to change the supplemental forages being fed to try to bring in the protein from forages. For example, if corn silage or sorghum/sudan silage are being used to supplement early pasture, try instead replacing some with high quality alfalfa or other higher protein forage. That may be more economical.”

Brickner said that this spring offered a unique opportunity to see the benefits of a gradual transition from stored feed to pasture, since a fast transition often results in extremely high MUNs because the cows’ rumen bacteria need time to adapt to the change. Since this year forced

many farmers to transition gradually, the CROPP/OV veterinarian did not see the big spike in MUNs that he usually does.

“This points out the value of a slower transition,” he explained

Hoffman also says supplementation could help improve milk production in conditions like spring 2019.

Feeding protein in spring?

“Yes, feeding some extra protein might help during a spring like this, but I wouldn’t advise going overboard with a lot of it — maybe adding in just 1-2% over the normal grain mix protein level to see if there’s a response,” she said.

Abel-Caines agrees that supplementation is important when there is a shortage of protein in forage.

“For short-term correction that will benefit the cows immediately, feed heat-treated beans and small grains combined with pastures higher in legumes,” she said. “For long-term correction that will benefit both plants and soil, correct the mineral deficiencies in the soil, and seed pastures with missing native legume species.”

Sarah Flack, a Vermont-based grazing livestock specialist with Flack Consulting, has been seeing low MUNs on many farms, but says this is not unique to this year from her experience. In fact, this was something she saw even in last year’s drought.\

Interestingly, Flack says she knows successful grass dairies with consistently low MUNs. She wants to see more research, because in her view there is no simple explanation for the low MUNs.

Flack is seeing variability as well, with both high and low MUNs within the same geographical areas.

Given these inconsistencies and the many unanswered questions, she is interested to see what will be learned from a research project she is part of that seeks to understand the causes of different MUN values on grass dairy farms across the nation. The project is in the first of four years, and hard data will be available this winter.

Overall, this spring's low MUNs were puzzling, and it looks like time and more research will be needed to help answer these questions.