



by John Goeser

# Feed hygiene doesn't stop at the bunk



CONSULTANTS in agribusiness often find themselves working with teams as we explore symptoms and troubleshoot situations that are tough to nail down. That's understandable, as animal and dairy nutrition is an immensely complex field, where science, experience, and some art are blended together to feed cows efficiently. The basic premise behind diet formulation is balancing the ration for a desired calorie supply, based upon feed intake and production level.



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The balancing involves your nutritionist crafting a healthy and energetic diet to provide your cows adequate protein, starch, sugar, fiber, and fat, after accounting for nutrient digestion potential with all available feeds. The nutrient digestion potential piece is key, and I often compare and contrast dairy cows with humans to help understand this tough topic.

## Humans and cows differ

In human nutrition, food nutrition fact labels assume constant caloric

value per gram of nutrient. For example, 5 grams of sugar in your food equates to 20 calories total, assuming that each gram of sugar yields a constant 4 calories.

In dairy nutrition, there are no constants. The calories cows capture per nutrient amount swing wildly due to different rumen digestion factors and interactions. For further insight, reference the November 2015 *Hoard's Dairyman* article "Cheerios provide ration insight." The interacting factors in the rumen will be the focus of this article, and a recent case study highlights the impact for a well-managed dairy.

## A big-time engine

Think of a dairy cow's rumen like a diesel engine. The diesel fuel in the tank is equivalent to the energy in the diet, and the engine is equivalent to the rumen. Both a diesel engine and today's dairy cow rumens have immense potential. The key to unlocking potential with a diesel engine is maintaining the engine with clean fuel and appropriate engine tuning. If the diesel fuel is contaminated by water, for example, the engine runs poorly and achieves only a fraction of the potential, or it won't even start at all!

The rumen can be affected similarly if something negative interferes with rumen digestion and metabolism. There are numerous negative interactions we know about in dairy nutrition, just like water in diesel fuel.

For example, mold, spoilage yeast, and mycotoxins are fungal factors that can disrupt rumen function. However, in a recent case study, fungal contaminants were not readily found in the total mixed ration (TMR) at a well-managed dairy. Yet, the dairy's nutritionist reached out for support, wondering what other factors we could investigate and look for.

In this case, mold, yeast, and mycotoxin load was relatively low, but cows were still exhibiting variable intakes, manure, and performance. We opted to also check the TMR for contaminant bacteria. This has been a valuable approach over the past several years, looking for enterobacteria in the TMR. We've learned that there are nonfeed-born contaminants coming into many farms' TMRs, and undesirable bacteria load can be a leading indicator for other opportunities we have to clean up the feed in front of cows.

Going back to the case study, we found a high bacterial load using a TMR enterobacteria test and returned to the dairy to ask questions. We talked about cleaning the mixer, checking feed alleys for contamination, and watching for tires and equipment driving over feed or through mud and manure during feed mixing and delivery. We also discussed how birds, water or rain, and other factors can contribute to higher bacterial loads as well.

We stumbled upon an unrecognized feed hygienic risk factor with this herd. We learned the mixer wagon was driving through a building with mud and manure routinely, prior to delivering feed to the high-producing cow pens. This situation was not unique, and there have been

numerous farms I've been a part of where we found some aspect of the mixing and feeding program was contributing to undesirable feed hygiene and contamination.

## Feed wasn't the issue

We often can't see the contamination in the ration at the feedbunk; however, the opportunities in cases like this are real. There was no feed or forage issue here, but the opportunity was rooted in cleaning up the feed delivery process. In other similar cases, dairies have recognized dry matter intake and performance responses after changing their feeding program to clean up the ration.

Check your feed mixing and delivery process, looking for negative interacting factors that could disrupt rumen digestion and performance. I suspect there are feed conversion efficiency opportunities for many herds out there. Bring your nutritionist, herd manager, feeder, and veterinarian together to review and discuss opportunities.

The health and performance benefit may be substantial, impacting your margin per hundredweight. I look forward to sharing unique situations and experiences, such as those discussed here, that we can learn from in this column. 🐄

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