



by John Goeser

# Performance projections can still be elusive

**D**AIRY herd performance projections have been a hot topic as of late. Performance classically corresponds to milk and component production, but it can be better defined as energy corrected milk (ECM)-based feed conversion efficiency. Methane or nitrogen emissions could also be folded into these performance projections.



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Regardless of what dairy performance metric we're projecting, at times I feel like we'd be better at predicting the weather. Weathermen and nutritionists have common ground in that dairy diet performance and weather projections will be okay much of the time, but there are times that we're way off. This latter case is what's driving the column this month as we seek to understand why cows may not align with the diet projections, for better or for worse. We'll start by reviewing feed quality.

## A sum of the whole

Your forage or feed energy value equates to breaking down the feed into a sum of digestible nutrients. This topic has been the subject of many seminars and articles. At the surface, protein, fiber, starch, sugar, and fat all provide caloric potential. Potential, though, doesn't necessarily equate to outcome. Each of these nutrients' digestibility has to also be accounted for to sum up the realized caloric value per pound of feed.

Avoid focusing too much on any one feed analysis measure. Realize feed quality is summed up by the

whole. Accordingly, when reading feed analysis reports, I advise dairy producers and nutritionists begin feed quality projections with the following four numbers: fiber and starch content and fiber and starch rumen digestibility. Protein and fat are important to account for as well with energy projections, but usually, big performance swings due to feed quality changes correspond to the carbohydrates.

Beyond feed analysis reports, today's leading dairy nutrition models, such as the Cornell Net Carbohydrate and Protein System (CNCPS), apply these concepts. Advanced nutrition models account for nutrients and digestibility across all feeds in the diet to project milk production potential with complex equations. The complex nature to the models complicates troubleshooting when performance projections deviate from reality, but remember to focus on the carbohydrates.

Ensure rumen fiber and starch digestibility of the major feeds are correctly accounted for in your projections. "Major" can be defined as any feed included at greater than 3 pounds per cow. Don't assume feed library values are accurate; often, they're not. Also don't assume that purchased feed quality is consistent. Commodity feeds like corn grain, soybean meal, and canola can change in nutritional value over time.

## Starch is still a challenge

While we've made gains in projecting performance changes associated with forage fiber and fiber digestibility, projecting responses due to different grains or starch digestibility still proves challeng-

ing. The issues here are multi-faceted, with numerous interactions beyond feed energy value coming into play. Grain and starch digestibility affects both the rumen and total tract and fermentable starch. It also contributes to intake feedback within the cow's body and brain. For example, experience has shown in some unique cases that cows may overeat when fed poorly digesting grain, with no noticeable differences in milk production. In this exemplary case, I hypothesize cows eat to meet an energy demand, and unfortunately, we would have been more accurate in forecasting the weather.

## Anti-nutritional factors

Beyond feed quality inputs or the energy feedback interactions described above, anti-nutritional factors can come into play to disrupt the rumen and total tract digestion process. In these negative interactions, feed quality analysis and diet projections fall short because the cow's digestion machinery is breaking down due to a contaminant in the feedbunk. The feed quality and diet energy potential is there, but cows don't capture the potential.

Feed contamination doesn't always stem from the individual feeds. Beyond major feedborne contaminants such as spoilage yeast and mold, mycotoxins, or bacteria, often overlooked contamination can stem from dirty mixers or push-up implements where dirt or manure are mixed into feed. This contamination path is all too common for dairies. I've lost track of how many cases like this I've been pulled into over the years. Look for those nonfeedborne contamination points, such as

dirty mixers, push-up implements, or feed alleys. This is also a good discussion point to bring up with your feeder team on a quarterly or biannual basis.

## Management can trump all

The last major area that complicates our performance projections stems from feed management disconnects. Inconsistent feed deliveries or push-ups, poorly distributed feed, or inaccurate mixing all destroy dairy performance potential. Digging into feed management records can help uncover some of the disconnect, but not all. This is also an area we can evolve and improve in our records and accountability.

All in all, nutritionists are good, but at times we miss the mark in projecting performance. When this happens, it's frustrating. Talk through the numerous reasons why intake and production projections disconnect from reality that we covered here. I'll be the first to admit that nutrition can be like weather, but trust we're always looking to get better with our projections. 🐮

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