HOARD'S DAIRYMAN
FEEDING FUNDAMENTALS

by John Goeser

Play some horseshoes with your total mixed ration

WHEN playing the game of horseshoes, getting close is often a winning formula. The horseshoe toss outcome may not be perfect but getting closer to the post is generally desirable. There are some aspects of your dairy's nutrition program that are probably like a horseshoes game where getting closer is better. The total mixed ration (TMR) placed in front of your cows is one spot to start.

From target to feedbunk

The diets your nutritionist sends over to your farm set the target. Think of these diet targets like the post in the horseshoes pit.

Different nutritionists may use different nutrition models, but their objective is the same: Deliver an optimal diet for the dairy's economic performance.

Things are complicated. These models operate on a dry matter basis, assuming cows are fed exactly the amount entered and that the feed nutritional analyses are both current and accurate when projecting the diet's energy and protein supply.

Moisture comes into the picture when the target formula is converted into a pen recipe via a feedsheet or feed management software. This is where things get even more complicated. Feed management software integrates dry matter or moisture data for all feeds, assuming this is both current and accurate, and pen counts from herd management software to define the recipe. The final recipe is sent to the scale head for mixing and delivery to the pen. There are a half dozen or more ways that the TMR can drift from the target, so we should start with the TMR and work backward to uncover margin opportunities.

Goeser is the director of nutritional research and innovation with Rock River Lab Inc., Watertown, Wis., and adjunct assistant professor, dairy science department, University of Wisconsin-Madison.

Begin with the feedbunk

There are several different areas to address when starting to toss horseshoes at your TMR to see if you're close. These include:

- Feed moisture and nutrition inputs
- Feeder accuracy
- Mixer consistency
- Anti-nutritional factors

TMR samples help us address most of these, but prior to noting these four areas, we need to delve into TMR sampling strategy.

Sampling your TMR is like sighting in a rifle mounted with a new optic. Experience tells us that decision making based upon one shot at the rifle range is foolhardy. Instead, we take several shots, then average the shot group to determine what scope adjustments need to be made.

Sampling your TMR is no different.

Research has clearly shown TMR sampling can uncover economic opportunities, but single TMR samples are like single shots at the rifle range. The way to overcome this is to take multiple samples and average the batch to empower better decisions. Several samples can be collected either at once or over the course of a week to generate a "shot pattern."

For example, an international client and I were talking through a TMR sampling-based nutrition program for farms without a nutritionist. We looked at one farm's data that samples their TMR multiple times per week. We looked at protein and starch trends, and it was clear that single samples would have led to erroneous conclusions. The trend line, averaging three samples on a rolling basis, provided a much more accurate depiction of the diet nutrient supply.

Whether we're talking TMR or other feed samples, I encourage your farm to use trend lines in your nutrition program to make decisions. The economic ramifications associated with feed decisions are bigger than any other cost center, as Gary Sipiorski and I described in the December 2022 column on page 663, "Nutrition needs data-driven decisions fueled by economics."

Load and mix TMR accurately

There are various areas where we can find opportunities within the TMR at the feedbunk. Evaluating feed management software records is a great spot to start finding feeder accuracy information. Seek out industry experts to help you dive into the reports and learn from their value-added support.

Beyond feed management software reports, check moisture and particle size with five to 10 samples throughout the feedbunk after TMR delivery. Penn State researchers have various extension publications available if you need a shaker box method reference.

Focus on moisture, the top screen, and the bottom pan results for each sample and determine the average and, more importantly, the coefficient of variation (CV) for the set. The golden thumb rule here is less than 5% variance. Up to 10% CV may be acceptable; however, if you find 20% or greater CV, then it's time to work backward to sort out where and why the mix is coming apart.

If your farm aims to be more aggressive yet, set up a sampling schedule for the TMR up to several times a week and monitor for weekly trends. In this case, taking one sample per day is fine, but the multiple-shot group we're seeking comes from looking at three to four samples over a week-to-week period of time.

I recognize labor is tight and costly, but feed is expensive, and you'd be surprised what can be uncovered. Moisture will substantially deviate over time on more than just forages . . . stay tuned for more on this in future Feeding Fundamentals columns.

The last two areas to dig into when checking if your TMR is close to target include sending samples to the feed and forage testing laboratory. Checking the nutrient, digestibility, mineral levels, and anti-nutritional factors like mold, yeast, mycotoxins, and bacterial contamination is often insightful.

Still, as laid out above, and especially when checking nutrient supply, be careful how much weight you place upon a single sample result. Avoid overreaching and making the wrong economically impactful decision based upon one sample result. Instead, toss a few samples at the opportunity to determine how close your TMR really is to the post.