



by Steve Martin

The next ration starts now.

ONE OF the notable differences between feeding dairy cows and every other class of livestock nutrition is having a near-immediate opportunity to evaluate the success of a ration change. It's a double-edged sword, though.

I often talk about the difference between an "academic ration" and one that is actually plugged into an on-farm feeding software platform. They don't necessarily have to be different, but they often are. There are several reasons why, and it is related to our ability as milk producers to have nearly real-time feedback on how a ration change impacted production.

I recently did a diet for some Wagyu beef cattle in a feed yard. I don't get to do much beef cattle ration work, but when the opportunity presents itself it is always enjoyable.

This was a "distance consulting" project, as I have never seen these cattle. I also had little information available for forage analysis. So I sent them what I would classify as an academic ration that met recommended levels of several nutrients. It was almost what you would turn in for a nutrition class in school if you were given a handful of ingredients and told by the professor to meet the nutrient requirements for a specific class of animal. This, of course, differs greatly from the task we do for our clients out in the real world.

When considering how the dairy nutritionist differs from the other species formulators, it is important to differentiate the "first" ration built compared to the "next" one.

The first ration built by a new nutritionist, or by a current nutritionist for a new kind of animal, is a bit like the academic ration. Sure, there are inventories to consider and the farm's ability to process, blend and deliver rations, but the starting point of the nutrients in the diet is to meet book value nutrient specs for that class of animal.

The next time the ration is built, we have so much more information to consider and see how it impacts performance. This starts to lean into the art of feeding dairy cows, but it is really experience and knowing what information to consider and what to ignore. We in the dairy industry are awesome at generating information. Knowing how to use it is the sign of a good real-world nutritionist.

So what are these things we measure and evaluate that have an influence on the "next" ration? If we are talking about a lactating cow diet, this is where the differences exist.

Collecting dairy production data goes way, way back. In the 1940s my grandfather drove the back roads of Alabama visiting dairy farms and collecting information for DHIA. When I compare the things he counted, weighed and calculated for the



monthly reports sent from Auburn University to each farm, it is very similar to the things our consulting group's data collection and performance reporting efforts aim to do.

The point is that when we build a diet for a dairy cow, no matter whether it is like it was in 1940 when you waited for a report in the mailbox, or if it is 2019 where you have real-time data on milk flow, components, body temp and reproductive status, we have a report card of sorts to see how well we built the diet. It is considering inputs from cows that consumed the diet where the "next" diet is born.

Data that came in the mail back then, or via a phone app today, is only part of the input. The other part is things you see with your eyes and feel with your hands. It is stuff you can't do very well over the phone.

What is manure saying?

Let's consider an example using manure scores as a proxy on how the diet is working from a forage/fiber/particle size standpoint. Anyone closely associated with producing milk talks a lot about the situation with manure from the cows.

If you started with an academic ration that had the correct amount of roughage included, but the manure is looser than desired, what do you do? Well, for sure you don't tell your client that the level was formulated correctly so it is okay. What you do is, no matter where the forage/fiber measures are currently, you will probably need to increase them.

It needs to be said that there are many other factors involved in this equation that could have an impact on manure consistency. It could be over-processing or even under-processing and subsequent sorting, or perhaps bad information on forage quality. But for this discussion, assume all of that was in order. In such a case, the diet will be tweaked as a valid response to the observation and in a couple of days you can see if the fix was effective.

The most basic of measured results would be simple milk flow average per cow per day. It is a number calcu-

lated daily on nearly every dairy and it is the heartbeat of how the dairy is doing. This is where the "next" diet probably gets the most attention. If milk flow is not meeting expectations, the diet will most likely be looked at for opportunities to improve.

In the ration evaluation project in the quest for more milk, what if the ration says all the buttons are already pushed, all the right levers are already pulled, and the diet has the maximum level of things that make milk and the minimum level of things that keep the cow healthy?

From an academic standpoint, the ration is good and should be supporting good milk production. What should a good nutritionist do? In this discussion, I am sticking to the topic of formulation and assuming the many other non-nutritional factors have been investigated. With the quality of farms we are blessed to work with today, these things are usually in pretty good shape and we find ourselves once again staring back at the ration.

In such a case, we think about what nutritional factors may be a layer or two under the surface (and we make sure there aren't any problems there.) We might re-look at forage analysis and perhaps at some macro mineral supplies that may have changed.

At some point, though, we will likely look at the ration as it is being fed today and find some way to make it better. Maybe there is some small corner of the diet that could be adjusted a bit better. The point is that the ration we have in the bunk now may be perfect on paper and perfect in execution. Even so, a directional move with a nutrient or two will likely be attempted and in a few days we will know if the change was effective.

The problem with all of this is, if you keep doing this song and dance over and over every time there is pressure to get more milk, you can eventually end up a mile away from where you started. One small step at a time, you find that your "next" ration is really too far from the academic one you started with. (You

know you are there when you ask a colleague to review a diet and it takes 10 minutes to explain why the ration looks like it does.)

Ultimately, many of these stories find their explanation in erroneous forage analysis, poor ration implementation, or some other variable that was not studied. But not always.

The good nutritionist gives proper weight to things learned from the professor in school, as well as things the cows tell him or her now. If you look up after so much sweat and tears and find that you have gotten off base, albeit just one baby step at a time, maybe it is time to start over.

When formulating diets, the "next" diet concept is right in front of your face, because in most programs you see the current diet while you are working on the "next" diet. At times, if you realize you have tweaked and tweaked and tweaked a diet into something you are not proud of, maybe it is time to build a new one.

For me, this means instead of copying the current diet to the "next" diet, I literally start from scratch. Some may call this a "do-over", but I prefer to call it starting with a clean slate. This approach fixes the nutrient drift caused by the previous umpteen ration adjustments that were all done in good faith, but at some point it is wise to tear it all the way down and rebuild from scratch.

"The problem with all of this is, if you keep doing this song and dance over and over every time there is pressure to get more milk, you can eventually end up a mile away from where you started."

Yes, that means re-entering the animal description model and redoing the painstaking task of carefully entering forage and by-product analysis – a true clean start.

The advent of near real-time or at least quickly available dairy cow performance data is a blessing and a curse. There is certainly more good than bad, but being careful to not over-adjust or adjust too quickly will keep you from chasing your tail and keeping the cows in a perpetual state of change. Don't forget that the cow's rumen is a delicate place and keeping everything on an even keel is a long-term win. Not all tweaks are bad, but I expect that as dairy nutritionists our risk is doing too much rather than too little.

Take time to give thoughtful consideration to what the cows are saying through numbers and visuals. Look at the current ration through a lens of nutrient requirements and supply, while fully considering risks in implementation. Only then make changes as warranted. By following these steps we can be sure we are feeding for the bottom line. **WEST**