



by Steve Martin

Ration building and implementation

IT'S A great feeling to watch a giant feeder wagon pulled by an equally impressive beast of a four-wheel-drive tractor gently lay out a beautiful bead of ration. The deep hum of the diesel and the sound of augers and belts discharging the feed is music to the ears. And there's also that awesome smell of just-mixed ration!

After the first few years of my career building rations in Texas (which smelled like alfalfa from Colorado), I remember the first time I smelled a really moist dairy ration that had lots of corn silage added to the alfalfa. Although it isn't something we can measure, we all know what a "perfect" dairy ration smells like. The aroma may be the final assessment of a ration that is well-built and ready for always-hungry milk cows.

In last month's column I discussed the role of the formulator in beginning to build a diet. I spoke about ration formulation software, ingredient analysis, animal models and the like. Now this month let's talk about taking that well-formulated recipe and get it to the feed bunk. After the ration leaves the nutritionist's computer, a new set of potential issues needs to be considered to best deliver the diet to the cows.

These steps of ration implementation are no less critical than those that designed the formula. Instead of lab analysis and linear programs, we now think about diesel, steel, concrete, groups of people and piles of feed. Correctly integrating these factors is a science unto itself.

Most likely in today's dairy world, computers are still involved. While considerations of nutrients and requirements dominate the formulation step, the implementation step leans more on engineering and human resources.

One of the convenient, though complicated, things about the way we build dairy rations is that the real recipe is one of ratios or percentages. No matter whether I communicate a ration on a percentage basis or a pounds per cow basis, it can all be the same.

A trick there, though, is navigating the constantly changing dry matter composition of each individual feed ingredient. This is the first place to stop and be sure that a good system is in place to handle the dry matter changes in feeds.

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I remember back in a college feeds and feeding class that there were some pretty smart people who never really latched onto this concept. "Do I multiply or divide? And is it by dry matter percentage or moisture percentage?" These are questions I hear still today. Highly successful dairy professionals occasionally get tripped up by this math – not so much the concept, but the math.

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In most of our routine work we send the diet recipe in dry matter pounds format. The moisture changes are handled at the dairy level. A rigorous dry matter checking system is a must for every dairy. Considering all of the many uncontrollable variables that exist on a dairy, failing to manage this one is a big mistake. Develop a plan for this and stick to it.

Loading order does matter

One of the next decisions to make is what will the ingredient loading order be? In the nutritionist's computer this is of no consequence. In the dairy's on-farm feed program it's a really big deal. There are probably two main reasons it matters.

First, depending upon what type of mixer is used, there is a correct loading sequence based upon density and length of each ingredient to insure thorough blending.

Second, if you add mixing time to this sequencing we can manage the correct final length of the blended ration as interpreted by a ration shaker box.

I often get some pushback on achieving the perfect loading sequence. The location of liquid tanks, feed bins and bagged mineral areas often override the perfect mixing order. This is not ideal. I suggest consulting the mixer manufacturer, asking what the ideal loading order is, and trying that first.

I've written before about the pluses and minuses of using premixes. But a quick note is needed. When we build premixes we must think hard about what and why. There are angles there that can save time and money, but I suggest we think more about improving accuracy and delivering the correct particle length for low feeding rate forages such as straw.

At times, adding a roughage like straw or grass hay to a grain premix can result in a perfect final length. At other times it can cause the important roughage to lose the main reason it is in the diet – to offer some

rumen mat-building length.

Including bagged additives into premixes that have very specific inclusion rates, as well as low feed-rate highly concentrated ingredients, is usually a very good idea.

Mixer wagon function has never been my favorite topic. One of our team members has a passion for this and spends more time peering over the edge of our clients' mixers than I do. This is a spot where extreme care for human safety is paramount. We must, though, include a look into the mixer in our process. The engineering of how mixers move material around to thoroughly blend a ration amazes me. Spending a minute to look for dead spots is very important.

Overloading is a mistake

One thing that can be seen easily from the ground is overloaded mixers. This is a constant point of analysis, as pen sizes and intakes do change. Each mixer has a range of correct volumes to insure adequate mixing. Going below or above that range is a mistake.

We have all seen mixers with feed falling over the edge. The owner, feeder and nearly everyone else can plainly see it too. There is always resistance to mixing additional loads to correct this, but it's really a non-negotiable point. If you can see feed over the edge from the ground, fix it!

The human factor in on-farm mixing probably deserves an article of its own. All of the best laid plans can be wrecked if feeders don't buy into the importance of the task before them. You can make this point by reminding yourself and the feeding team what percent of the total cost of running a dairy goes into a mixer one loader bucket at a time. It should give you pause.

Employees who load feed are no less important than the employees who touch the cows. Both need to be operating at a very high level of competence. We must think of ways to help feeders be successful. Most of these relate to providing good, well-maintained equipment, regular training, and high expectations.

In addition, connecting feeders with cow techs completes the circle of why mixing feed correctly is good for everyone. Let the feeders hear from the fresh cow guys about what it is like to stay late doing DA surgeries or giving calcium to milk fever cows caused by errors or preventable procedural drift by the feeders.

Most feeding programs have feeder

error reporting functions. Use them. Find a way to motivate feeders to take the time to do a good job. Have periodic feeder trainings! Ask your feeding team members for ideas about how they could do a better job. Work to be sure there is not a language barrier in the important task of mixing and delivering rations. All of these efforts pay big dividends -- and ignoring them will keep the dairy from being successful.

We are starting to see parts of dairy ration building becoming more and more automated. The use of GPS, robotics and the like are coming or are already here. Embrace those new tools that seem to fit your particular operation, but remember the human element in successful implementation of technology.

Use a team approach

A team approach to managing a dairy's feeding area is crucial. Including the nutritionist, herdsman the mechanic, along with the owner or manager, in regular feeder meetings sets you up for success.

Use shaker boxes to be sure that sequencing and mixing times are correct. Ask the head feeder to occasionally walk through the fresh cows with the herdsman to see the results of their efforts. Be sure the feeding team knows how much milk the dairy is making.

As I walk a feed lane following the mixer as it lays down feed, I pick up and smell handfuls of the mix. I think about all of the parts of the process that result in this nice ration. I think about the length of the particles and I look down the bunk to be sure it is thoroughly mixed.

It is really good to make eye contact with the feeder and give him or her a good thumbs up, or wave them down and take advantage of a teachable moment. It's important. And in the end the cows will tell us if we've done a good job.

From the first steps of ingredient analysis and ration modelling to the final steps of mixing and delivering, we must have very high standards for all of it. Just like I need to be sure I am using the most up to date hay and silage analyses, the dairy needs to be sure the flighting on the auger is maintained and the scales are calibrated. Every step is crucial.

Paying attention to the computers, equipment and people who are involved will insure that we are formulating, mixing and feeding for the bottom line.