

Straight to the Bottom Line

By: Steve Martin

On Farm Quality Control in Feeding Dairy Cows

In this column last month, we discussed the most important machine on the dairy, the feed mixer. To be sure, this is where the process starts in the production of milk. This feed mixing is truly a highly technical process and deserves great attention to detail. It is amazing to me when I think that the chemical molecules in the feeds stored in the commodity area will soon leave the dairy in a milk truck. The carbons that are in the corn starch and forage fiber will end up being metabolized by the cow and end up as carbons in milk fat and lactose. Likewise, the nitrogen molecules that are in the soybean meal, alfalfa and even urea will soon be rebuilt by the cow to form milk protein. So, you pay for the carbons and the nitrogen in your feed bill and will soon sell those same molecules as pounds of butter, protein and other solids when they leave the dairy as the components of your milk shipments. What an amazing creation is a dairy cow that can complete that transformation every day!

With such a complex biological system inside of the dairy cow, we are compelled to build a complex and highly managed system to deliver those nutrients to her daily. As we know, a dairy cow responds very well to consistency both in timing and mixing of ingredients. As we look at the feeding area in a large scale modern dairy, what issues should we consider to do the best job possible in delivering those nutrients to the cow? I think that question can be answered in two words; Quality Control. A large dairy farm might mix and feed as many as 40,000 tons of air dry feed annually. This is no small number and may rival tonnages by some commercial feed mills. With a size and scale that big, we must do a good job with quality control in every phase of the feed mixing process.

To start, it is crucial that we know the nutrient specifications and moisture levels on all ingredients. Some scheduled forage and ingredient testing must be part of the normal program. As well, ingredients need to be segregated in an orderly fashion so we know what we are feeding and when. We often think first about forages in the discussion about nutrient variation. Let's be careful not to forget the normal variation seen in byproduct feeds as well. So, assuming we have a good handle on the nutrient analysis of the things we have to feed, what is next?

The next step involves both the machine and the employee. As we attempt to process these ingredients and blend them for feeding, both the machine and the human must be up to the task. Mixers need regular maintenance to be sure knives, kickers and augers are all in the best shape possible. Because of normal wear and tear, this is an un-ending process. Many dairies have put these maintenance issues on a calendar schedule to be sure they are not overlooked. Another very important part of the process is the scale on the mixer. These scales should be calibrated regularly to insure accuracy. As well, close attention to cleaning and maintaining load cells is crucial.

Now as it relates to the employee loading and feeding the pens, how can we make sure their performance is up to par? First, we need to be sure that one of the commercially available on-farm feeding software platforms is in use and that the employees are trained to use it correctly. This technology has been a huge help in the effort to correctly feed cows on commercial dairies. Not only can we communicate the intended diet formulation to the feeder, we can also evaluate performance by checking accuracy. Some feeders are now on a bonus system where they are rewarded for accurate

loading and unloading. A comment here on these accuracy measurements is needed. In most instances, the accuracy of the feeder is largely impacted by the pounds of tolerance set for each ingredient. If one dairy has a wide window of tolerance and a very high accuracy value, that feeder might be actually doing a poorer job than another dairy with tighter tolerances and lower accuracy measures. As well, as tolerances are tightened in an attempt to improve feeding accuracy, an unintended consequence could occur. When trying to get the last few pounds of an ingredient with a tight tolerance, those ingredients often end up being over fed. Additionally, in this case, forages probably have the highest chance for over feeding due to the clumpy nature which they fall into the mixer.

Ingredient loading order, mixer RPMs, variations in forage cutability and moisture variations are all on the minds of a good feeder. The logistical issues related to mixing feed are just as important as the nutrient composition of the final mix. The ending physical form of a diet is not to be overlooked. So, evaluation of the diets as they are delivered to the cow is an important step as well. Then, when it is all said and done, the cow is the final judge. If cow health, production and reproduction are meeting expectations, then we can be sure the feed mixing step is being performed adequately. If problems exist at the dairy, a reevaluation of the feeding process, not just the diet on paper, is probably justified. And one last point; with the high cost of feed ingredients in recent months, there is very little room for error in the feeding area of a dairy!