Feeding and breeding

by Steve Martin

PERHAPS the most critical task on any dairy is getting cows pregnant.

Calving is the single most important event in the dairy industry. Parturition is what starts it all for first lactation animals and is the ultimate "do over" for mature cows. With it begins a daily process of milk production that will last many months. After calving, the road map for that individual cow is already set.

An analogy I often use to explain the life of a milk cow to non-dairy folks is also useful to those of us in the dairy industry. It involves an old-fashioned clock. The yearly cycle of an economically successful dairy cow can be explained using the face of a clock that, instead of having 12 numbers, has 12 months.

I use this visual to explain that if a cow calves on New Year's Day this year, the goal is to have her calve again on New Year's Day next year.

Continuing with this example, and knowing a cow's gestation is approximately 280 days, she needs to get pregnant again in late March. "That seems quick!" is the response of most non-ag people. "What do you do, keep them constantly pregnant?!"

This objection is easily handled. If I am in Colorado during this discussion, I simply point to the mountains. "Up there, cows' cousins the elk, moose and deer follow the same pattern. It happens the same way in nature." That almost always satisfies the concern... but if only it were that easy on the dairy.

Nothing easy about it

Getting dairy cows pregnant takes a lot of work. If we are to make the date of getting that cow settled in late March, much has to be done the weeks and months before. That effort starts during their two-month dry period. A successful dry cow program sets up cows for a healthy transition. It is the first step to getting them pregnant again. Early transition health problems like milk fever, ketosis, and especially retained placentas and metritis put cows at a disadvantage reproductively.

Once a cow has survived her early lactation health risks, the next battle is maintaining body condition. As her genetic capacity for milk production begins to out-pace her ability to consume feed, she pays the price with losses in body weight.

This is normal for a cow and, to a point, is well tolerated. But if losses become excessive, the complex system in her body that readies her to conceive is slowed or even stopped.

Getting adequate volumes of feed into cows is the best way to help them conserve body weight while milking heavily. Techniques and special feed ingredients that allow cows to get even more calories out of what they are already eating is where the real skill is. Comfortable cows that are healthy and fed a well-balanced, nutrient-rich diet can overcome this negative energy balance and become pregnant in time to make the goal of another New Year's Day calf.

Goal is usually missed

What happens if an individual cow misses this breeding deadline? The reality is that since the number of gestation days is a non-negotiable, she will certainly miss her New Year's Day goal. It should be said that many cows on every dairy do miss this deadline. If all cows calved every year on about the same day as the previous year, the dairy would have a 12-month calving interval. In reality, most successful dairies do not quite achieve this goal.

Why all the fuss over trying to get this yearly return to production to be 12 months? The answer has more to do with milk production than it does reproduction.

We have all seen what is likely the most recognized graph in all of animal agriculture – the lactation curve. On it we have days since calving on the x axis, and pounds of milk on the y axis. At freshening, or from day zero to day 3, each cow has a starting place of maybe around 50 pounds. From that point, her daily milk production goes up each day until somewhere around 60 to 90 days. And the higher the better!

After she has peaked in milk production it is only bad news from there: production will begin to drop. The only question is how fast. It is the certain and well defined downward slope of the curve that is the economic problem of missing the late March successful breeding and January 1 calving goals.

Every day our New Year's Day-calving mom milks past the next New Year's Day costs the dairy money.

Due to the certain downward slope of the lactation curve, any days she is in the milking string past 305 days means the dairy will experience low margins due to her feed cost and low milk production. Those extra days may still result in a small profit margin, but the dairy as a whole and that cow as an individual would be more profitable if she didn't have to milk those days at the very end and bottom of her lactation curve.

Repro success makes milk

How does this impact the way we evaluate nutrition performance at a dairy? Within the population of any given dairy herd, the fewer long days milking cows there are, the better production will seem for the entire herd. No matter how hard we try to get around it, we are a "tank average" focused business. Success in reproduction probably has as much impact on how much milk a dairy ships every day as nutrition does… or at least it is close.

Thanks to another common dairy metric, days in milk (DIM), we can quickly see if the DIM of a herd is extreme enough in either direction to have an impact on how cows are milking. DIM gives a clue about how many long-days cows are in the herd.

In the past, I have used reports from DHIA groups that would correct or adjust milk production back to 150 DIM. This is a nice principle, but using 170 DIM might be a more reasonable standard.

In either case, this adjustment uses the slope of the downward part of a lactation curve to move the milk production up or down to what it would be if DIM was more normal.

This DIM adjustment is the most meaningful when you have a herd that is having poor reproductive success or may experience seasonal breeding. In such cases, days in milk might creep up over 200 or in some cases higher. Let's do some math to make the point.

If a herd of cows was producing 70 pounds of milk and the dairy struggled to get cows pregnant and thus was averaging 210 DIM, we can use math to truly evaluate if 70 pounds is good or bad.

If this dairy had a more desirable DIM of 170, with the same genetics, feeds, rations, cow comfort, pen conditions, etc., the milk production would be approximately 77 pounds. If you are stuck at 70 pounds of production, shipping 77 pounds seems like a mile away. In fact, you are already doing all the good work to make 77 pounds, but there are simply too many long DIM cows that are giving you their poorest month or two of milk production ability.

When a dairy finds itself in this long DIM position, there are a few things to do.

First, work with credentialed professionals to help get the cows breeding better.

Second, consider feeding a late lactation ration to manage body condition gains in long DIM cows.

Third, you will need to work a little harder to evaluate how the rations and animal husbandry are translating into milk production by lower DIM cows.

In high DIM herd situations, you can't use the tank average to evaluate much. It will certainly be a key in determining cash flow at the dairy, but we must look deeper to see if we are still feeding and caring well for the cows.

Track DIM groups

Using milk production by DIM groups as a tool is most helpful, and don't forget to use solids-corrected milk for this. No matter how few cows you have that are in early DIM range or around peak DIM, those that are there should be milking well. There might not be enough higher milking, lower DIM cows to make much of a difference in the tank average, but you must track them to evaluate the nutritional success of the dairy.

So, one of the most valuable aspects of a ration to positively impact milk shipped may not be a feed ingredient at all. Getting cows pregnant at acceptable levels is the magic nutrient we have all been looking for.

Nutrition plays an important role in reproductive success, but you can't have a high DIM herd and make impressive milk. I would rather be a dairy producer with stellar reproduction and average nutrition than the other way around.

Working hard and smart to consistently get cows pregnant on time assures that you are truly feeding for the bottom line.