EXCLUSIVE

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FIND THE TECHNOLOGY THAT FITS YOUR DAIRY

by Michele Ackerman

Events like World Dairy Expo can make a dairy producer's heart beat a little faster at the sight of shiny new equipment and innovative technology to manage the herd. The choices often leave them pondering, "Is this something I should be using on my farm?"

The short answer is it depends.

Rather than just bringing new technology to the farm, think first about what you want to accomplish, advised Paul Dyk, a consultant with GPS Dairy Consulting LLC. He and his colleague, Andre Pereira, discussed approaches for adopting new technology in a recent episode of GPS DairyCAST.

Dyk and Pereira weighed in on a pair of widely available dairy technologies — activity monitors and feed software — and urged dairy producers to ask three important questions before implementing new technology:

1. What do we expect it to do?
2. Who will implement it?
3. How will it pay for itself?

Activity monitors abound

Activity monitors are certainly attractive, noted Pereira. This technology can track movement, monitor rumination, and even pinpoint the exact location of every cow. It is advancing fast, and there are many new options. But the first conversation about this technology with producers revolves around return on investment. Can this technology pay for itself? Can it bring you peace of mind?

Answers to these questions are as unique as the farm itself. In a robotic system, for example, the geo-locator feature can be helpful for finding a cow on the fetch list or a heifer that is not coming to the robot for milking. "But will it be more useful than an employee who has been working at the farm for 20 years and knows every cow by name?" inquired Pereira.

Dyk agreed that the geo-locator has its merits, but it may not be the feature that brings value to every dairy. For example, in a rotary parlor, a sort-gate diverts problem cows as they leave the parlor. The crew is not likely to need to head to a pen of 300 animals to find a cow that prompted an alarm at 2 a.m. when that cow will be coming through the parlor again an hour later.

For some dairies, activity monitors may or may not be the most cost-effective solution. Though they can be a great fit to manage reproduction, a simple investment in tail chalk could be a smarter choice to tweak heat detection, noted Dyk. On the other hand, if you are looking to improve cow health or better monitor transition cows, activity monitors might be a wise investment.

The protocol for managing data and alerts should also be considered before you make the leap. In herds with 2,000 or more cows, it is impractical to respond to every notification. Running reports in the morning and afternoon is a wise approach to improve efficiency with this technology. Pereira recommended that producers run reports in the morning before feedbunk checks so the team can simultaneously be on the lookout for problem cows. Get in, get out, and be done, he advised.

Dyk encouraged producers to also consider the employees who will be doing the work. Sometimes we expect our employees to be as excited about technology as we are, but they may not be ready for it. Dyk said he has seen dairies lose great herdspeople because they brought in new technology but then the employees were reluctant to use it.

Evaluating feed software

Questions about feed software often coincide with the purchase of new equipment, like a mixer. Most ask, "Is this software better than what I have?"

Again, ask yourself how you will use the software, noted Pereira. Are you the type of person who looks at reports once a week to make sure cows are eating the right amount of dry matter? Or do you want more data? Maybe you look at reports daily to make sure load and drop accuracy are correct. Or maybe you have three or four feeders and want to make sure they are not over- or underfeeding the cows.

Some producers need easy-to-use software because they are not techies. Others want all their data in a cloud so it can be accessed by anyone anywhere. Some people are data geeks who want all the bells and whistles and every report possible. Every program has its pluses and minuses, so do your homework.

Another important consideration is the software's ability to interact with the truck scale. Several legacy software programs do a great job with that task and have been doing it for a long time, the speakers noted.

Dyk recommended using caution when moving to a new technology. Make sure you are ready for the switch and the glitches that may follow. Some producers encounter one problem and then toss the whole program. Others can tolerate issues because they want to be on the leading edge of software technology.

Be sure you have someone on the dairy who is a master at using the software or a consultant who is, noted Dyk. Recently, he was on a dairy that was doing a great job with load accuracy and mixing protocol but struggled with the timing of the first feeding. Dyk discussed with them how to measure that and set up a report on the feeding program they already had. They just needed a little help from someone who understood how to use the software.

Today it is almost a necessity to have some kind of software to manage the feeding program, Dyk said. By investing $2,000 to $2,500, plus a monthly subscription fee of about 10 cents per head per month, a dairy should be able to set up a decent program, remarked Dyk. That investment can usually be recouped rather quicky.

The data from the feed software is also a great way to educate employees who may be doing a good job but need a refresher on doing their jobs even better. It may also be a useful tool for developing employee bonus programs.

Evolving technology

In the next couple of years, producers may be using more vision-based technology, according to Pereira. This technology is interesting because all you need is a camera. It's not complicated, and it is being developed quickly, he shared.

Dyk is equally enthused about the possibilities of vision-based technology. Time-lapse cameras and their software and algorithms will soon let producers know how often and when feed is being pushed up, how long and when cows are without feed, and how much feed is left in the bunk.

New technology is continually being developed for the dairy industry. But before you are wooed by the latest and greatest, make sure it is a fit by asking these key questions: Who will be responsible, what do you want it to do, why do you want it, and will it provide a return? 1000+

■ The author is a dairy and agricultural writer based in Columbus, Ohio.

FOR OUR 1,000+ PRODUCERS

Welcome to this new section in *Hoard's Dairyman*, tailored specifically to you. Here we will provide content focused on the unique requirements and challenges found on operations milking more than 1,000 cows.

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CONSIDER GROUPING COWS BY BODY CONDITION SCORE

by Alvaro Garcia

IN CONTEMPORARY dairy production, customizing feeding groups based on cows' physiological state is standard practice as we aim to meet specific nutrient requirements and enhance health, productivity, and overall well-being. Utilizing multiple total mixed ration (TMR) feeding groups offers economic advantages and potential nutrient cost reductions.

To address variability within groups, "lead feeding" is commonly used, providing extra nutrients to high-performing cows. This involves adjusting the feeding regimen using the average milk production plus one standard deviation or the 83rd percentile method.

Separate lead factors for net energy of lactation (NEL) and crude protein (CP) have been proposed, with suggested values of 133% for NEL and 126% for CP when feeding one group. For two groups, the lead factors differ: 119% for NEL and 113% for CP for the low-production group; and 130% for NEL and 125% for CP for the high-production group. Lead-feeding strategies allow dairy farmers to tailor feed regimens to each group's specific needs, ensuring optimal nutrition and maximizing production potential.

Research conducted in the mid-1970s observed a net gain of $30 per cow per year in income over feed costs (IOFC) when using a two TMR strategy compared to a single TMR approach. Other studies reported an IOFC advantage of $60 per cow per year for two TMR feedings, despite lower annual milk production. Subsequent studies in the 1990s and 2000s also reported gains ranging from $10 to $44 per cow per year in IOFC when transitioning from one to multiple TMR groups.

These studies highlighted the significance of grouping criteria, diet nutrient specifications, milk production effects, and the number and size of the groups. They also emphasized the importance of considering factors such as body weight (BW) and body condition score (BCS) changes in grouping strategies. Optimal grouping based on similar nutrient requirements allows for diet formulations that reflect the actual needs of each group and their variability.

Genetic factors significantly influence variation in body condition score, with approximately 60% of the differences attributed to them. This genetic component may explain why some cows accumulate body reserves at a faster rate, leading to overconditioned cows with lower milk production that may need to be dried off early.

During the first 20 to 30 days of lactation, all cows typically experience greater weight loss due to calving and higher energy expenditure. As a result, the distribution of BCS and weight is skewed toward the lower end and does not follow a normal distribution. However, as lactation progresses beyond Day 40, the energetic balance of cows tends to approach a normal distribution (Figure 1). For instance, in a group of 1,000 multiparous cows with a mean BCS of 3 and a standard deviation of 0.25, approximately 680 cows would fall within 2.75 to 3.25 BCS.

Lead feeding is practical and physiologically sensible for fresh cows during the first three weeks of lactation. However, the impact of lead feeding diminishes for cows that have experienced less weight loss. At this stage, separating cows based on continued weight loss or weight gain and feeding them different TMRs can ensure a more uniform high pen.

This approach aims to provide cows genetically predisposed to weight loss with a more nutrient-dense diet, promoting a positive energy balance, synchronized breeding activity, and a higher proportion of cows entering the breeding cycle. Cows with lower BCS have lower pregnancy rates achieved through artificial insemination, while cows that gain condition have higher pregnancy rates.

Allocation is critical

In livestock production, effective feed allocation is crucial for optimizing returns on investment. It involves allocating the right type of feed to animals with varying nutrient requirements within carefully selected groups, aiming for maximum productivity and profitability. Technological advancements like 3D cameras have made feed allocation more efficient.

Using a computer interface and sorting gate, homogeneous groups of cows can be created for feeding. The goal is to have a group of fit, breedable cows rather than simply aesthetically pleasing ones. Figure 2 showcases the distribution of BCS obtained using a 3D camera in a successful dairy farm.

During early lactation, cows typically experience a loss of body condition, which stabilizes around 60 days in milk. Transitioning cows from the fresh cow diet to a high-pen ration, and dividing it based on BCS dynamics, can expedite their return to ovarian cyclicity.

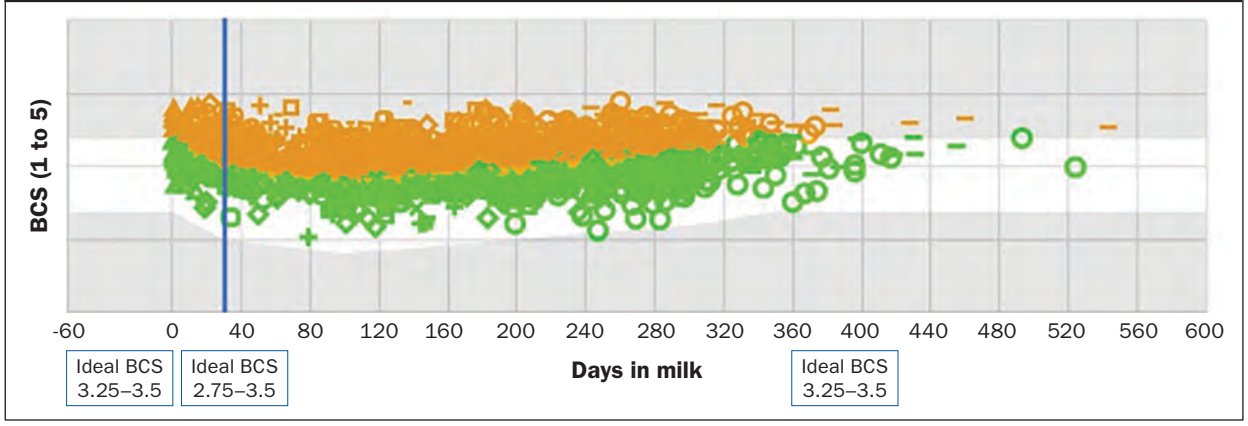
The dynamics of BCS in the low group also require attention. Many farms have cows in the low-production pen that gain excessive body condition as they approach the end of lactation, leading to issues during the dry period. By dividing these cows into two low groups, feed allocation and BCS homogenization during the dry and close-up periods can be improved. Strategic management of feeding and resource allocation based on BCS dynamics optimizes cow health, productivity, and well-being throughout lactation and the dry period.

In summary, proper allocation of resources, including feed and labor, is crucial in livestock production. Efficient allocation ensures animals receive the necessary nutrients and care, leading to improved productivity, animal health, and profitability. By strategically managing resources and considering animal requirements, farmers can create an environment conducive to optimal performance. 1000+

■ The author is a retired professor of dairy science from South Dakota State University. He is now a consultant with Dellait Dairy Nutrition & Management.

Figure 1: Normal distribution of BCS for lactating cows

Figure 2: Distribution of body condition score obtained by a 3D camera



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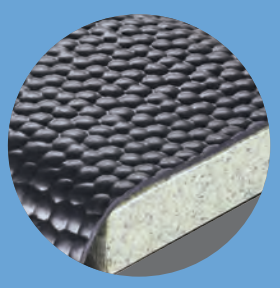
by Agri-Comfort



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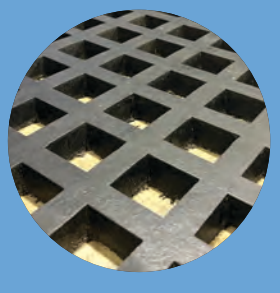

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CHOOSING BETWEEN ROBOTS AND A ROTARY PARLOR

by Abby Bauer

The milking center is at the heart of a dairy farm, and when the time comes to make updates, producers can be faced with a big decision. A growing number of farms are moving toward rotary parlors or robotic milking, but how do they decide which milking system is best for them?

During a Knowledge Nook session at World Dairy Expo, two dairy farmers shared why they chose the milking system they did. For Mitch Moorlag of Edaleen Dairy, he said the decision to go with robots was fairly simple.

Pleased with robots

Moorlag farms with his wife's family in northwest Washington, just a mile from the Canadian border. The dairy was started in 1975 and slowly grew. The double-41 stall parlor that was installed in 1996 was showing its age, so in 2017, they started to look around at their options.

They had considered a rotary parlor as well, but a few reasons led them toward robotic milking. A major factor was labor. At their location near Lynden, Wash., Moorlag said they are competing for employees with other agricultural commodities, such as potatoes, raspberries, and blueberries. Roofing businesses pull that same labor pool away in the spring and summer.

In addition, Washington established overtime laws for dairy farms for anything over 40 hours per week. Moorlag said their employees wanted to work more than the standard work week, which would require a lot of overtime pay. On top of that, Moorlag noted that some of their long-time employees were nearing retirement age, so they knew they would be losing part of their workforce in the coming years. "The labor side was huge for us," he reiterated.

They also found their customer base liked the idea of robotic milking, where the cows were on their own schedule. "For customers, everything about the robots was a positive for them," he said. They added an educational room with a viewing window into one robot box and cameras into a few other robots to show images on large screen televisions.

Since installing their 20 DeLaval VMS 300 robots and moving to complete robotic milking 15 months ago, they have seen a 4% rise in milk production and expect that to climb over time. They are also seeing less lameness and injuries in the herd now that cows are not traveling to and from the parlor.

Automated milking also allows their team more time to focus on the cows, which helps them catch problems quicker and maintain animal health. For these reasons and more, Moorlag said the robots have been "a great deal so far."

They are currently milking 1,100 cows and will grow to 1,300 cows in the next year. That will max them out on box time for the robots and their freestall availability.

A rotary was his best decision

Derrick Josi is the fourth generation at Wilsonview Dairy in Tillamook, Ore. The dairy was established in 1918, and he started looking at new parlor options 10 years ago. Josi also considered robotic milking, but in the end, he chose to install a rotary parlor when they moved their dairy to a new location out of a floodplain in 2020.

The Josis are currently milking about 720 cows in their DeLaval 50-stall rotary parlor, with capacity to grow to about 1,000 to 1,100 cows. One reason he chose a parlor rather than robots is because he did not want alarms coming in at midnight when something wasn't working. He preferred to know exactly when cows were being milked and when breakdowns could arise, and he has been more than happy with his choice.

"The rotary has been an amazing experience," Josi shared enthusiastically. "The rotary is by far the best decision I have ever made in my life."

Josi is pleased with his rotary parlor for several reasons. At 2x milking, they saw an improvement in milk production. Milking is also faster, and the last cow in each group to get onto the rotary is still back in the freestall barn in less than an hour. "This system allows them to just be cows," Josi noted. Cow comfort and cow flow was important to him.

Labor was also a consideration for Josi when choosing his milking system, but he didn't want to reduce his labor force. Instead, he maintained his employees and actually gave them a pay raise since they were milking fewer hours per week as he didn't want their quality of life to go down. The milkers now work eight-hour split shifts five days a week. The improved working environment and pay bump has resulted in better employee retention and higher quality employees, both positives in Josi's mind. With the efficiency of the rotary parlor, Josi believes his labor needs are similar to what would be needed in a robotic setup.

Like Moorlag, he also considered the public perception aspect, as he hopes to do more agritourism on the farm in the future. For Josi, he felt watching cows be milked as they slowly rode the rotary parlor would give guests a positive image of modern, large scale dairy farming.

Derrick Josi, Jeff Hahn, Mitch Moorlag, and Jason French had a discussion about robotic milking and rotary parlors during World Dairy Expo. Abby Bauer

Do your homework

Moorlag and Josi said they toured multiple other farms before deciding what milking system they wanted to install. Questions about milk production, cow health, and reliability of service were at the top of their list. They emphasized the importance of getting opinions from other dairy producers. "When you talk to the producer, that's when you find the answers," Moorlag noted.

These dairymen chose their milking system for similar reasons, but their final decision depended on what was best for them. After doing research and considering all their options, both came to a conclusion they are satisfied with. 1000+

■ The author is the managing editor for *Hoard's Dairyman*.