DIETS CAN BE FORMULATED more accurately to meet cows' nutritional needs when they are grouped by stage of lactation.

GROUPING COWS COULD IMPROVE INCOME OVER FEED COSTS

by Paulina Letelier

SORTING dairy cows by stage of lactation may improve farm profitability by supporting the peak production of high-producing cows and lowering feed costs for low-producing cows. Understanding your farm's feed costs in addition to your cows' response to pen moves and diet changes is key to capitalizing on this strategy.

The overall goal of grouping cows by stage of lactation is to reduce variation in metabolic requirements within each group. Thus, diets can be formulated more accurately to meet the cows' nutritional needs. For high-production or early lactation cows, we need to provide enough nutrients to overcome a negative energy balance and maximize cows' production potential.

Conversely, when excess nutrients are provided to low-production cows, they do not contribute to additional milk or components. Rather, those nutrients are either lost to the environment in the urine and feces or accumulated as adipose tissue in cows that are no longer growing. By adding a low-production or late-lactation group, a farm can avoid overfeeding nutrients, reduce the risk of excess body condition, and potentially reduce feed costs. Lowering feed costs in the late-lactation group may significantly impact the bottom line, especially as we consider income over feed costs (IOFC).

Potential impacts

Overall, research has shown that grouping cows this way can result in economic advantages, but the extent of the benefits is determined by the milk production responses due to pen moves and diet changes as well as milk price and feed costs.

Managing different rations and cow groups can be challenging for several reasons:

1. **Training:** Feeders must be capable of mixing different rations.
2. **Labor:** It takes extra time to feed more than one ration.
3. **Scheduling:** Feeding and milking times must be coordinated to ensure cows return to fresh feed.
4. **Facilities:** The barn design needs to allow more than one group of lactating cows.
5. **Potential milk production losses:** Cows may drop in milk production when switching pens, particularly when moving to a late-lactation/low-production group.

Use your records to evaluate the effect of pen movements on milk production. Using monthly Dairy Herd Information (DHI) data and pen movement records over time, you can compare production responses when cows stay in the same pen versus moving them to a different pen.

I analyzed monthly DHI data from a 750-cow dairy from May to September 2023 to evaluate milk production responses when moving cows with and without a diet change. On this farm, cows in Pens 2, 3, 4, and 5 are fed a high-cow diet. Cows in Pen 5 are confirmed pregnant. Cows in Pen 6 are fed a low-cow diet.

I averaged milk production by pen and observed that, when cows moved from Pens 2, 3, and 4 to Pen 5 without a diet change, milk production decreased by 1.6 pounds. When cows moved from Pen 5 to Pen 6 with a diet change, milk production fell by 12.2 pounds. For the cows that stayed in Pens 5 and 6, milk production dropped 4.8 and 6 pounds, respectively (Figure 1).

These results indicate that, on this farm, pen movement is not a factor that substantially reduces cow performance; milk responses are consistent with advancing days in milk (DIM). The more drastic drop in milk production was due to diet change.

Effects on income

Figure 2 shows milk production with advancing DIM for the high- and low-cow groups using individual cow data from five months of DHI testing. Clearly, cows fed a high-cow diet had greater milk production compared to cows fed a low-cow diet. For example, at 250 DIM, cows fed the high-cow diet produced an average of 95.4 pounds of milk whereas cows fed the low-cow diet produced 73.6 pounds of milk. This big difference is due in part to moving the lower performers to the low-cow group.

The logical follow-up question is this: How does the loss in milk production due to diet change affect the bottom line, specifically IOFC?

A recent publication addresses this question. Alex Bach in Spain found that grouping and feeding cows based on their level of production most likely results in improved IOFC even when milk production is penalized. Benefits of grouping to improve IOFC occur when the savings in dietary cost are greater than the losses in milk production and components. Moreover, IOFC advantages are sensitive to milk price and feed cost. When milk prices are low relative to feed cost, or when feed cost is high relative to milk prices, grouping cows according to their level of production substantially improves IOFC.

Using the example shown in Figure 1, we can see the increasing economic advantage of grouping cows as the milk price falls — even when average per-cow milk production dropped by 12.2 pounds as cows moved to the low-cow diet (Table 1).

How much cheaper does the low-cow diet have to be relative to the high-cow diet to improve IOFC? Using the same farm data, if the high-cow diet costs $6.80 per cow per day and the milk price is $15 per hundredweight, the low-cow diet must cost less than $4.96 (73% of the cost of the high-cow diet) to see a positive difference for IOFC. If the milk price is $20 per hundredweight, the low-cow diet must cost less than $4.42 (65% of the high-cow diet) to see a positive difference in IOFC.

Now let's say the cost of the high-cow diet rises to $9.18 per cow per day (a 35% increase). If the milk price is $15 per hundredweight, the low-cow diet needs to cost less than $7.34 (80% of the cost

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Figure 1. Milk production response to pen moves and diet change

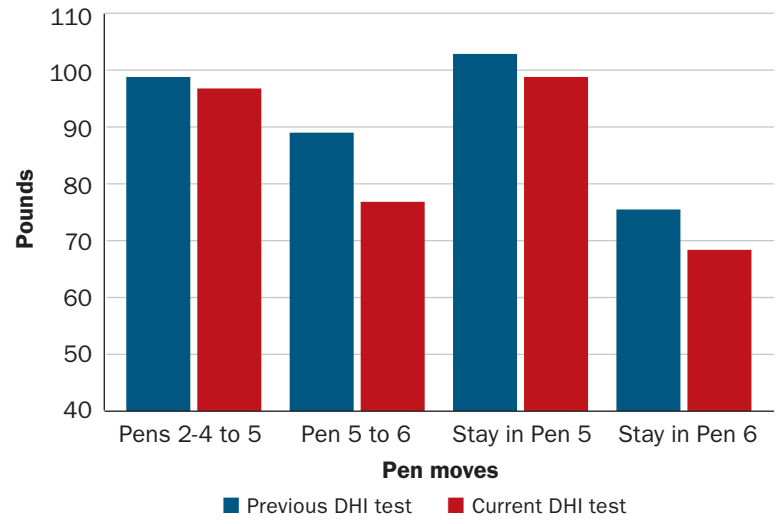


Figure 2. Relationship between milk production and DIM in two different cow groups

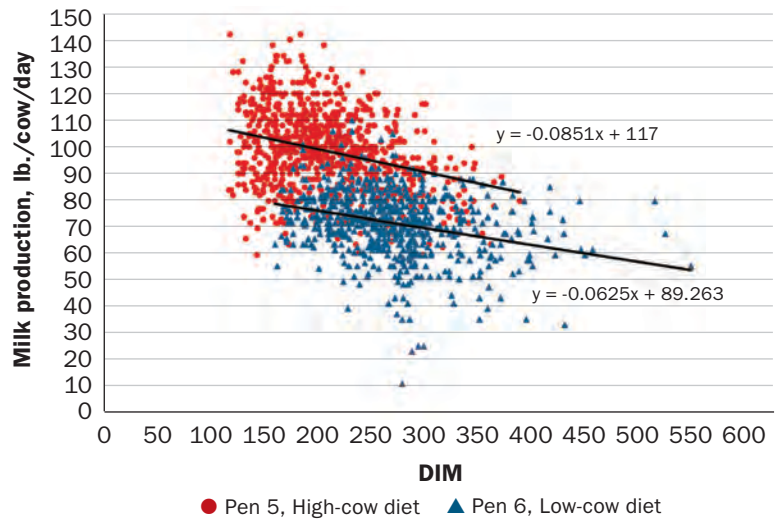


Table 1. IOFC of the low-cow diet relative to the high-cow diet

Milk price	IOFC difference*	
$/cwt.	$/cow/day	$/year
22	-0.42	-26,000
21	-0.30	-18,519
20	-0.18	-11,038
19	-0.06	-3,557
18	0.06	3,924
17	0.19	11,406
16	0.31	18,887
15	0.43	26,368

*IOFC of low-cow diet minus IOFC of high-cow diet.
Data was calculated using $6.76/cow/day for the high-cow diet and $4.50/cow/day for the low-cow diet. Feed cost was calculated using average pen intakes. Twenty percent of the herd is fed the low-cow diet (approximatively 168 cows).

of the high-cow diet) to see a positive difference in IOFC. If the milk price is $20 per hundredweight, the low-cow diet must cost less than $6.79 (74% of the high-cow diet) to see a positive difference in IOFC. This demonstrates that grouping strategies are more beneficial when feed prices climb relative to milk price.

Look at your dairy

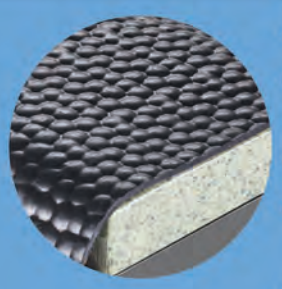
These results are farm-dependent, so farm-specific conditions and needs must be considered when determining grouping strategies. Stocking density, DIM, primiparous versus multiparous grouping, cow comfort, and barn layout also can affect IOFC.

Grouping cows according to their production level is a strategy that can improve IOFC, especially when the milk price is low and feed costs are high. Work with your nutritionist to analyze your farm's data and conditions. Use that information to determine the best strategy to support milk production and control costs on your dairy. 1000+

The author is a dairy nutritionist with Vita Plus.

Welcome to the Great Indoors

by Agri-Comfort



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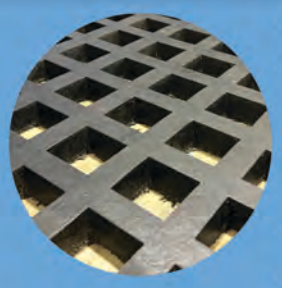

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DAMAGE CAUSED BY TIRE TRAFFIC can cause yield damage or, worse yet, kill the plant.

CRUSHING YIELDS WITH WHEEL TRAFFIC

by Brian Luck

WHEN it's time to harvest alfalfa for silage or hay, we are usually concerned about getting the crop cut at the right time, hitting weather windows for good drying conditions, and removing the crop from the field while maintaining the correct moisture and quality. How often do we give any thought to the machines we use in terms of tire pressures, ground pressure from machinery tires on plant regrowth, and machinery traffic patterns in the field during harvest?

Research at the University of Wisconsin-Madison suggests that these considerations are also important to alfalfa yields and stand persistence. Ensuring we minimize damage to alfalfa stands during harvest will protect yield over time, extend stand life, and boost profit margins.

Ideally, when harvesting alfalfa, we would use the lightest machines possible. All of these machines would be fitted with radial agricultural tires capable of being operated at low tire pressures, and these machines would only be in the field when soil conditions were optimal for minimizing damage to alfalfa crowns without causing soil compaction. Unfortunately, farming doesn't work that way. Often, an efficient harvest is required as opposed to operating in ideal weather and soil conditions.

Tires make a difference

Most machinery associated with alfalfa harvest use agricultural tires and are required for their specific operations. However, some of the greatest offenders to ground pressure applications are the machines used to transport the harvested crop from the field to the storage site. This is true for both alfalfa silage and hay production where trucks designed for on-road travel are used to haul the silage or hay and are driven in the field to collect the harvested crop.

In the case of silage harvest, our research showed that on-road trucks, specifically semitractor-trailers, were the most efficient method for transporting silage from the field to the storage site. These machines have reasonable in-field speed, high carrying capacity, and high on-road speed that makes the transport of silage from the field to the storage site most efficient. In the same study, straight-framed trucks and tractor-towed carts were less efficient than semitrucks and trailers but were not statistically different from each other. This indicates that some level of transport and harvest efficiency can be maintained by utilizing machines equipped with agricultural tires compared to on-road tires.

Parker Williams at the University of Wisconsin-Madison surveyed multiple machines associated with alfalfa harvest and tabulated the average weight and associated ground pressure applied by these machines. This work revealed that machines involved in alfalfa harvest equipped with agricultural tires apply ground pressures ranging between 100 to 220 pounds per square inch (psi), while machines equipped with on-road tires apply ground pressures ranging between 520 to 820 psi. This increase in ground pressures applied by these on-road tires has great potential for lasting damage to the alfalfa crop. Whenever possible, try to utilize agricultural or floatation tires in alfalfa fields. These tires provide a wider and longer ground contact area that distributes the weight of the machine over that larger area, having less impact on the growing crop.

Tire pressure also plays an important role in reducing damage to growing alfalfa plants. Williams calculated an average jump in ground pressure of 7.2 psi for every 1 psi of tire inflation pressure for agricultural tires. This rise is due to the ground contact patch of the tire being reduced as the inflation pressure increases.

Our research showed that vegetative index variations in regrowing alfalfa were impacted by machinery wheel traffic at various tire inflation pressures. Plots with machinery traffic applied by tires operated at lower inflation pressures showed more regrowth 10 days postcutting than those that had traffic applied with higher tire inflation pressures. Minimizing ground pressure by maintaining a lower tire inflation pressure will reduce damage to regrowing alfalfa and minimize soil compaction.

Damaged to dead

Alfalfa yield reduction is not the only concern when considering machinery traffic in alfalfa fields. In some instances, the wheel traffic damage can be severe enough to kill the entire plant. This has implications for the longevity of alfalfa stands and how many years the fields will be productive. The University of Minnesota's Deborah Samac showed that wheel traffic reduced alfalfa yield between 12% and 17% when applied two days after each forage harvest. This study also showed that wheel traffic from machinery significantly reduced plant counts.

If wheel traffic is managed well in a field, the productivity of that field could be better maintained over time, allowing producers to leave fields in alfalfa longer. This would provide additional soil health benefits while maintaining desired feed production and forage quality levels.

In an ideal world, all of our machinery would have working widths that are multiples of each other so that the tires fall on the same lines within a field, but I can't imagine a farmer or custom harvester selling or replacing a perfectly good machine just because the working width did not match with the other machines in the fleet. Since this is the case, true controlled traffic is costly and difficult to achieve in the purest sense. However, there are some steps that can be taken to minimize the area of the field impacted by machinery tires and minimize the damage caused by the machines. This is accomplished by controlling when machines are in the field.

TO LIMIT FIELD DAMAGE, pay attention to tire pressure, tire type, in-field roads, and timing.

Make it quick

Research conducted at the University of Wisconsin-Madison has shown that most of the damage caused to regrowing alfalfa plants when exposed to wheel traffic happens as more regrowth is present. When new shoots are present and growing, the wheel traffic has a much better probability of causing damage. This may not impact yield at the next harvest, but it does require the plant to "catch up" compared to plants that were not exposed to wheel traffic and possibly expend more resources to do so.

Limiting the number and type of machines in the field as more days past cutting occur is a good way to minimize damage. Also, having operators understand the importance of limiting the area impacted by wheel traffic is another good practice. If it is obvious that a machine has passed over a certain area, the subsequent machines can follow those wheel tracks to reduce the area impacted by tires. Defining in-field "roads" on headlands and when traveling to the chopper or collecting bales reduces the total area impacted by the tires. The plants within the "roads" will undoubtedly be damaged, but the total area impacted will be reduced.

There is a lot to consider when harvesting alfalfa for silage or hay. Giving some attention to the machinery used in the harvesting process can pay dividends over time in terms of alfalfa yield and persistence. 1000+

Minimize alfalfa field damage by considering:

1. **Tire pressure:** Check the tire pressures on all machines entering the field and ensure that they are within manufacturer's recommendations. Aim to be on the low inflation pressure side of those recommendations to optimize the ground contact patch of the tire. If operating on the road and in the field, compromise on a mid-range inflation pressure to reduce tire wear.
2. **Tire type:** Minimize the use of on-road tires. Use floatation tires when possible or radial agricultural tires to lower the ground pressure of the machines.
3. **In-field roads:** Define "roads" in the fields so that the total field area impacted by machinery tires is reduced.
4. **Timing:** Minimize machinery traffic in alfalfa fields as time passes after cutting and regrowth begins. The taller the new shoots, the more susceptible they are to permanent damage.

■ The author is an associate professor and machinery systems and precision agriculture extension specialist with the University of Wisconsin-Madison.

BUILD A SUCCESSFUL TEAM

by Kathryn E. Childs

A FARM is only as successful as its team of doers. The owner, their family, employed workers — whomever resides at the center of an operation directly influences production. It carries, then, that these critical roles should be occupied by individuals best suited to meet your farm's singular needs. But how might an employer find such employees, and how can they go about retaining them?

In a two-part webinar series called "Hiring and Retaining Farm Employees — What you need to know and do," University of Delaware Farm Business Management Specialist Nate Bruce and University of Maryland Extension Legal Specialist Paul Goeringer shared their expertise on how to know when to hire and how to navigate successful employee retention.

When to hire

It can be hard to know when to bring on a new employee. Small businesses and farms in particular have to be careful not to take on more than the operation can financially sustain. Hidden costs that accompany a new hire, such as health benefits, trainings, and retirement savings, can take a toll on revenue and cash flow. Still, if an employer is aware of signs that indicate it may be a good time to expand their team, hiring can serve to contribute to, rather than inhibit, a farm's overall success.

Indicators that an operation may be suffering from insufficient labor include:

- Inadequate or incomplete production tasks
- Current employees' added stress or illness
- Time spent on tasks not generating revenue

"If sales are not materializing where they should be, that's the biggest sign you may have a labor problem," said Bruce.

If any of these sound familiar, it may be time to grow your workforce. If things are running smoothly, odds are you can hold out on hiring.

Also, it's important to keep in mind that hiring needs can look different from month to month, especially if your farm has any seasonal enterprises.

Once you've determined a new hire is needed, both Goeringer and Bruce noted the importance of composing a detailed job description.

The description should outline desired qualifications and skills; relay job responsibilities and expectations, including non-essential duties; and communicate hours and starting pay.

An example of a job description outline according to Bruce's presentation is as follows:

1. Job title
2. Job summary (clear and concise)
3. Work relationships (within the position you're hiring for)
4. Job qualifications
5. Job duties or tasks
6. Hours required
7. Résumé and reference request

Be detailed but straightforward. Employment incentives come later, usually in a separate document either at the interview or upon hiring.

Conducting the interview

As an interviewer, you should have a list of information you want to share with the candidate as well as a list of questions to ask them. Since you are going to invest resources into this new hire, you want to make sure both parties are clear about job expectations — both for your sake and for theirs.

Some sample interview questions as outlined in the "Finding and Keeping Farm Employees" handbook, written by Nate Bruce and Maria Pippidis as an accompaniment to Bruce's and Goeringer's presentations, include:

- Tell me about a job you didn't like and why. How did you deal with the aspects you didn't enjoy?
- Is there a supervisor you've had in the past that you enjoyed working for? Why?
- Tell me about a time you had to work with a coworker you did not get along with. How did you deal with this situation?
- How do you go about learning a new skill? Are you able to follow directions while learning? Are you adept at helping others learn new things, too?

Additionally, an interview should include discussion about working hours, conditions, and responsibilities. Even though these are already outlined in the job description, it's important to reiterate expectations and, in this way, gauge a candidate's ability to meet your needs based off their past experiences and current abilities.

Most importantly, Bruce and Pippidis wrote, "Don't do all the talking at the interview." Let the candidate interview you, too.

Training and motivation

So, you've checked references, evaluated applicants for traits and qualifications, ranked top candidates, and, at last, selected one for hire. What next?

Bruce said providing thorough orientation and training is critical to ensure they enter the business understanding and appreciating their role. Employees are more motivated to work and to work well when they know their position is valued and that it fits into a broader purpose.

One way to decide what to include in a training is to ask current employees what they found helpful in their own onboarding or what they wished had been included. Consider an overview of the farm, employee policies, job duty information, and coworker and superior introductions.

Once the precedent has been set regarding the job itself, keep an open line of communication between you and your employees. An employer who gives and receives feedback freely is almost guaranteed to retain more employees than one who is overly critical and avoidant.

Further, promote a motivating work environment by offering personalized recognition, providing learning opportunities, getting to know your employees, and ensuring their skills match their duties.

By actively tracking an employee's performance and engaging in consistent communication, you will make a periodic or annual review more manageable for you and less stressful for the employee — even more reason for them to want to stay on board.

Provide some benefits

Training, recognition, and communication are all fantastic ways to retain employees, but a flexible benefit package that lets an employee choose what is best for them can go a long way, too.

Benefits can include healthcare, retirement savings, life insurance, paid time off (PTO), mileage reimbursements, disability accommodations, dental, vision, and more. Each employer's benefits offerings are going to look a bit different, as is each employee's chosen package, but the same benefits must be offered to every employee. All full-time employees must receive the same full-time offers, and all part-time employees must receive the same part-time offers.

It might be helpful to have a broker assist with health insurance decisions. Size of operation and state of residence impact what options are available, so it's important to familiarize yourself with the requirements where you live.

Retention starts with a diligent hiring process and ends with employee satisfaction. A thorough interview, comprehensive training, consistent communication, and benefits all contribute to a positive workplace environment. The more intention that is behind building a team, the more successful that team will be. 1000+

■ The author is a freelance writer based in Rockford, Ill.

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CULTURAL DIFFERENCES ARE AN ASSET

by Kathryn E. Childs

AS TRAILSIDE Holsteins grew, so did owner Michael Johnson's need for employees. Longer, more frequent shifts at the dairy called for more hands on deck — and not just any hands. Johnson sought workers who had a background in agriculture, who shared his family's farming values, and who could be depended on to give it their all each and every day.

One of Johnson's first nonfamily hires was Sasamo, an immigrant and agricultural worker from Mexico. Sasamo helped Johnson and his team meet and hire more Hispanic employees, and Trailside Holsteins, located near Fountain, Minn., flourished.

"I wanted to grow and reach new levels, and I knew I couldn't do that by myself," Johnson said on an episode of the GPS "DairyCAST" podcast. "Managing people is very different from managing cows. But I didn't want to look at bringing on new employees as a stressor. I wanted to look at it as an asset."

Seeing it firsthand

During his conversation with Stephanie Jens of GPS Dairy Consulting, Johnson shared how a trip to Mexico with the nonprofit organization Puentes shaped how he approaches cross-cultural barriers such as language, workplace hierarchy, and productivity.

Puentes ("bridges" in English) was founded in 2003 out of a desire to bridge the gap between Hispanic employees and the farmers they work for. Their organized group trips to Mexico are part immersion, part connection: farmers and community members from Wisconsin and Minnesota visit the families of local Hispanic workers, and, in this way, gain a greater understanding of the place and culture from which their immigrant neighbors come.

Johnson cited his 2023 trip with Puentes as an eye opener to some cultural differences between he and his Hispanic employees. For example, during conversations with ag workers in Hidalgo, he learned of the discomfort associated with workplace hierarchy. "No one is the boss," they said, which explained the issue Johnson had had with convincing workers to step into managerial roles.

Additionally, it is common in Hispanic families for family members young and old to be taken care of at home, rather than in day cares or senior living facilities. Work for his Hispanic employees, Johnson learned, is about family, and family, in turn, is about work. If one cannot support their loved ones by staying, they will do so by leaving.

Work hard, play hard

Perhaps the most challenging difference to embrace was that of Trailside Holsteins' Americanized hyper-productivity compared to that of Hispanic farms — while equally hardworking, workers in Mexico far supersede workers in America when it comes to celebration.

Upon seeing firsthand the extensive festivals put on by Hispanic families he visited, Johnson realized implementing such opportunities for his employees in Minnesota would only benefit workplace morale. He began organizing bowling trips and conducting regular meetings at which employees were invited to share their stories and successes through translated sit-down conversations.

Not every farmer will have the opportunity to leave their operation and embark on an immersive journey to learn more about where their employees come from, but a little goes a long way. Providing a translator, inviting individuals to share about their experiences, and hosting opportunities for cross-cultural learning are just some of the ways employers may improve the experiences of their workers.

MICHAEL JOHNSON AND HIS FAMILY have embraced the cultural differences of their farm team members.

If you have employees who are curious about their rights as ag workers or as immigrants, or if they have questions about healthcare, English Language Learning, or community services, Puentes' website (www.puentesbridges.org/) includes links to these topics and more.

Puentes continues to conduct trips to Mexico for farmers and community members. Visit their website to learn more about their mission and to get involved. 1000+

■ The author is a freelance writer based in Rockford, Ill.