

Grouping strategies to efficiently utilize ration nutrients

Jessica Tekippe for Progressive Dairyman

The Christmas season is here and dairy farmers might be overfeeding a large proportion of lactating cows when the same ration is fed to a large group of animals. Diets are normally formulated to provide enough nutrients to the most productive animals, but may result in giving extra nutrients to less productive individuals due to inefficient nutrient utilization.

Splitting lactating cows into smaller groups and offering group-specific feeding rations allows for a more precise supply of nutrients, increases income over feed cost and decreases nutrient excretion into the environment. A common question in the industry is, "Does it pay to group cows?"

Individual cow feeding systems were developed as an effort to better maximize milk output relative to feed input. Feeding more grain also has been found to increase milk production in fresh cows. The notion of feeding based on production and individual feeding systems are still used on farms today. Robotic milking systems also have taken advantage of this concept due to their ability to feed individually based on production. However, as our industry has changed and herd size has grown, individual cow management gave way to managing groups of dairy cattle. Both systems offer management advantages and disadvantages.

The multi-ration grouping system for lactating cows is not only an attempt to lower overall herd feed costs, but to also offer rations more closely balanced to the needs of a greater percentage of the herd. For example, fresh cows are typically in a negative energy balance and are utilizing body reserves to produce milk because they are not getting enough nutrients. The ability to feed a more nutrient-dense diet

during this phase is critical to reproductive and milk production performance. On the flip side, a group of late-lactation cows under the same energy-dense ration would be overconsuming nutrients and gaining too much body condition.

There are several strategies to grouping. However, if resources are limited and only a few groups can be achieved, there are two strategies that have the highest return on investment. Grouping to reduce metabolic disorders should be the first consideration. Research shows most metabolic issues cost around \$300.

Grouping animals 21 days prior to calving provides the biggest return on investment due to the ability to balance both the amino acids and dietary cation-anion difference (DCAD). Doing so will result in improved liver function, calcium status after calving and access to more concentrated nutrients. Research also shows pre-fresh cattle given access to rations with added amino acids eat more and thus transition better through the calving process.

The negative social consequences of moving cattle between groups persist for three to seven days. This is why it is key to group pre-fresh animals for 21 days. Field observations of transition cow group interactions, movement between pens, feed space per cow and freestalls per cow found that 30 percent of the change in dry matter intake (DMI) could be explained by diet and animal factors. This suggests that management factors account for 70 percent of the variation.

It takes about 48 hours after cows change pens before social stabilization and the development of a stable hierarchy occurs within the group. In particular, effects on first-lactation animals and subordinate animals during

a high-risk period, such as the transition period, may be greater and last longer. Although detected changes in milk yield may be small, there may be long-term effects on animal health yet to be identified that are of greater significance. In addition, creating a fresh group (up to three weeks postpartum) allows for intense monitoring of cows, and may allow for more frequent milking and more space (both feedbunk and stalls). Furthermore, diet modification may boost milk production, and fresh group animals can be provided highly concentrated nutrients.

The second highest return on investment would be to separate first-lactation cows from older cows. This should be a high grouping priority even when the same diet is fed to both groups. Separating first-lactation cows from older cows improves milk production, reduces stress and may improve health. When primiparous cows were grouped separately, their eating time increased by 11.4 percent, meals per day increased by 8.5 percent, DMI increased by 11.8 percent, lying time increased 8.8 percent and lying periods increased by 19 percent per day. Research also suggests that the income-over-feed-cost response to increased milk production is linear. Anything we can do with grouping to help with production improvements would be cost-effective even at times of low milk prices.

Other key points when it comes to grouping strategies include the following:

1 Place emphasis on grouping dry, pre-fresh, post-fresh and first-calf animals appropriately. Make sure animals are grouped by the correct amount of days and work to make big group changes to reduce social interactions.

2 Strive for peak reproduction performance. Find and implement a reproductive program strictly adhered to making sure cows are inseminated by a determined day in milk. A constant supply of fresh cows results in increased production.

3 Watch body condition scores. Over conditioned cows typically have calving issues and trouble breeding back. Grouping cows based on production helps to reduce an oversupply of nutrients.

4 Grouping should not only minimize negative social interactions and encourage positive interactions, but a proper grouping strategy will also decrease within-group variation and increase across-group variation.

Nutritional groups that support herd diets closer to individual cow requirements saves feed costs and increases the herd's income over feed cost. This is an opportunity for dairy farms to increase their economic efficiency. I think with today's knowledge and nutritional strategies, grouping cows is a huge financial incentive. 🐄

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