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Consumption and Consistency: Keys to Success

Return on feed investment has never been more critical than in the current dairy economic environment. Every bite of feed that goes into a dairy cow needs to strike a delicate balance between content, concentration and cost.

Donna Amaral-Phillips, Extension Professor in the Department of Animal and Food Sciences at the University of Kentucky, Lexington, Ky., says increasing dry-matter intake can lead to the same amount of milk production with a less nutrient-dense — and thus less expensive — ration especially in cows past their peak in milk production. Table 1 shows how an additional five pounds per day of dry matter consumed can drop the requirement for energy density in a ration, or — conversely — increase nutrient intakes in the case of early lactation cows.

“The trick, of course, is in getting cows to consume that extra dry matter,” says Amaral-Phillips. She says that starts with a consistent ration that is changed as minimally as possible, and done so gradually when necessary. Consistency in the composition of the TMR from batch-to-batch also is important, with the dry matter content of wet feeds used as the bellwether for adjusting the rest of the ration.

Cows naturally prefer higher-quality forages, and in Kentucky, that means almost exclusively corn silage. Ron Wendlandt, PhD, a consulting nutritionist based in Lawrenceburg, Ky., says producers in the region have realized a two- to four-pound-per-head-per-day gain in milk production by simply installing processing rollers on their choppers. Once that silage is processed and ensiled, it still requires maintenance to retain its quality. Wendlandt recommends mixing rations twice a day in the summer and feeding them immediately, and keeping silage fresh to prevent overheating.

Hot weather also affects intake due to heat stress on cows, which Amaral-Phillips suggests should be managed with fans, misters, sprinklers and shade — the latter being important even if cows are on pasture. She also recommends 24 to 30 inches of bunk space per cow in the regular, lactating herd (30 inches bunk space allows for additional cows within a group) and 36 inches in the pre-fresh and fresh pens; a smooth feeding surface; and well-

maintained free stalls that encourage maximum lying time.

Except for the time they spend in the holding pen prior to milking, Amaral-Phillips recommends ready access to feedstuffs at all times. Wendlandt suggests to his clients that approximately 5 percent of the ration should be left and cleaned out immediately prior to the next feeding. “I also would like to see clients push up feed at least four times a day, but labor issues do not always make that possible,” he says.

Of course, factors with the cows themselves also will influence feed intake. Large cows eat more than smaller cows; first-calf heifers eat less than mature cows; overconditioned cows at freshening tend to eat less; and heavily producing animals have greater nutritional needs. Amaral-Phillips notes that the intake of mature cows peaks at about 8 weeks post-freshening, while first-calf heifers do not peak until about 14 weeks, followed by gradual, concurrent declines in feed consumption and milk production. “Cows that peak higher in early lactation produce more milk over the entire lactation, so achieving aggressive feed intake immediately after freshening is an important goal,” she advises. Also, research has shown that cows which eat well before and just after calving have less health issues in early lactation.

Those just-fresh animals — particularly first-lactation heifers — also are the most likely herd members to suffer from social pressure. “Timid cows will eat last, so ration availability and adequate bunk space is extremely important,” she says. “They are the same animals that have the potential to generate the most profit in the herd at any given time, so we should cater to their needs as much as possible.”

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CONSULTANT'S CORNER

Cows Should "Eat Healthy," Too

By Byron Wendlandt, PhD; Consulting Nutritionist, Kentucky Nutrition Services Inc., Lawrenceburg, Ky.

Just like people, dairy cows need healthy eating habits to achieve peak performance and optimal health. In some ways, that's very easy to do, because cows are creatures of consistency. They like to eat the same thing at the same time, every day. If we can deliver a very correct ration

in a very routine fashion, we should be rewarded with high milk production and cows with relatively few metabolic problems.

Unfortunately, it's not always that simple. Changes in feedstuff availability, feed prices and labor challenges are just a start of the list of issues that can impact the delivery and consistency of the dairy cow's diet. After more than 30 years in the dairy nutrition business, I am happy to share some of the key lessons I've learned to help foster healthy bovine eating habits.

- Rebalance for every crop. Most of my clients also raise their own crops. This automatically becomes an issue of consistency. They do not have the luxury of purchasing inputs based on nutritional specifications — they need to work with what they have available. That means that every year's crop needs to be evaluated for nutrient values and dry-matter percentages, with the TMR balanced and enhanced accordingly.
- Work to prevent SARA. Subacute rumen acidosis (SARA) is the major metabolic disease that challenges my clients. Pushing energy levels too high, fine particle size, and poor-quality forages all can contribute, and need to be monitored closely.
- Watch moisture content. Although the use of upright silos is waning, this ensiling system delivers the most consistent product in our relatively damp climate. I aim for 50% dry matter in the TMR at all times.
- Position feeding sites in the shade. Feeding areas placed in the sun discourage cows from eating, and lead to faster ration spoilage. Cows seek shade even when they are hungry.
- Purchase by-products from a consistent source. In this region, we are fortunate to have an ample and nearby supply of distiller's grains. The whiskey distilleries are very consistent in their processes, so their by-products are quite consistent as well. But I do encourage my clients to purchase from a single source if possible, to avoid variation between sources.

FROM THE MATERNITY PEN

Standard Dry Periods May Not Be Necessary for All Cows

The production paradigm of the standard, 60-day dry period may be starting to shift. Over the past decade, a number of studies have examined the impact and feasibility of shorter, 35-day dry periods.

One of the most recent was a trial conducted by a group of researchers at Laval University in Quebec City, Quebec, Canada and Agri-Food Canada Research Center, Sherbrooke, Quebec, Canada. Led by Doris Pellerin, PhD, professor, and his PhD student, Debora Santschi, the team studied 850 Holstein cows from 13 herds, comparing:

- A 60-day dry period, with a dry-off ration until 21 days pre-calving, then a pre-calving ration; to
- A 35-day dry period, with a pre-calving ration throughout the dry period.

On average, cows assigned to the 35-day group produced 1,166 additional pounds of milk at the end of the lactation prior to dry-off, due to extra days in milk. In the lactation that followed, the two groups showed no statistically significant difference in energy-corrected milk yield.

In addition, the short-period group showed:

- Fewer cases of ketosis
- No difference in incidence of displaced abomasum; milk fever; mastitis or body condition score changes
- Higher incidence of retained placenta in multiparous cows, although it did not translate into a greater incidence of metritis
- Slightly improved reproductive efficiency (although not statistically significant).

“Most cows today still are producing important quantities of milk at 60 days before their due dates,” says Santschi. “It appears that they may be able to continue milking for an additional three to four weeks with no adverse effects on health and productivity in the next lactation.”

BEYOND BYPASS

Controlling Dietary Induces Milk Fat Depression

What causes milk-fat depression (MFD) in herds of apparently healthy, well-managed, carefully fed cows? Clemson University researcher Tom Jenkins, PhD, and others have linked MFD to the formation of very specific bioactive fatty acids produced by fermentative bacteria in the rumen.

Jenkins says the “biohydrogenation (BH) theory” explains the basis for diet-induced milk-fat depression where unusual intermediates of ruminal fatty acid BH accumulate in the rumen and eventually cause MFD. As subtle changes in the bacterial population balance occur, the pathways of rumen BH shift slightly, resulting in changes in the specific trans-18:1 and conjugated linoleic acid (CLA) isomers available for uptake by the mammary gland and incorporation into milk fat (Figure 1).

A variety of dietary changes could be the cause of the bacterial shift that could eventually lead to MFD. Jenkins cites rumen fat load; low rumen pH, monensin and/or other ionophores; TMR dry-matter percentage; and changes in ration particle size as factors that can influence the chain of events that can ultimately influence milk-fat levels.

Read a [detailed summary of Jenkins' evaluation](#) of CLA formation in the rumen and their influence on MFD.

QUALITY CORNER

Consistency Requires a Focused Effort

As Dr. Donna Amaral-Phillips points out in the accompanying article, delivering a consistently blended TMR to dairy cows requires some effort and attention to procedures, but that effort will yield improved cow performance. Dr. Ron Wendlandt further emphasizes that even variability within individual ingredients should be avoided in the interest of providing consistent nutrition. West Central has long been aware of the importance that our customers place on the consistency of SoyPLUS and SoyChlor. The manufacturing plants and procedures for both of these products have been certified by ISO 9001 for nearly 3 years, and both plants received HAACP certification in the first quarter of 2011. These certifications are not intended simply to assure our domestic customers that we strive for manufacturing excellence — they are essential for the stringent requirements of many of our international customers. Most importantly, the procedural guidelines, checks and balances, record keeping, and testing that are the basis for these certifications ensure that every step of every process, from ingredient procurement to final product delivery, is performed by established protocols. You can count on SoyPLUS and SoyChlor to deliver the nutrients that you expect.

HAPPENINGS

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West Central is committed to using premium grown Iowa soybeans in the production of its value-added dairy products. We consistently want the best beans so we can consistently produce the best products for your dairy herd.

Contrary to previous years, this year's bean crop carried a higher protein content. Crushing and processing these beans, that protein content carries through into our soybean meal and

SoyPLUS bypass product.

As a result, West Central is raising the guaranteed crude protein minimum in SoyPLUS to 42.5%. Please remember, this will affect the inclusion rates of SoyPLUS in your rations.

West Central would like to take this opportunity to thank you for your continued support of SoyPLUS, and we look forward to continuing to serve your bypass protein needs in 2011.



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