Alberta Dairy Management
PREPARED FOR AND DISTRIBUTED BY THE DAIRY EXTENSION ADVISORY GROUP

Every Extra Pound is Profit

Almost half of my dairy clients are now feeding a one group TMR. And many of the rations I formulate for these producers look very similar, both on paper and in the bunk. Yet average (adjusted-corrected) production in these herds varies from as low as 21 kg to over 40 kg. Although I always try to identify the reasons for lower-than-expected production, I'm not always successful. But the one measurable factor that stands out above all others is feed intake. That herd producing 21 kg has a dry matter intake of less than 17 kg per cow; the 40+ kg herd is consuming over 27 kg.

The average cost of the TMRs I formulate is about 16¢ per kg of dry matter (including forage), ranging from about 13¢ to 19¢. Using that 16¢ figure and an average milk price of $50 per hectolitre, income over feed cost is $7.49 per cow per day for the low intake herd; $15.12 for the high intake herd.

The relationship between dry matter intake and production in my TMR herds looks very much like that shown in the graph below, although the figures used for the graph are theoretical values for a single 650 kg mature cow. The first 6 kg of dry matter this cow eats are required just to keep her alive and maintain her current body condition. Every additional kilogram she consumes provides enough nutrients to produce about 2.5 kg of milk, assuming the ration is well balanced at the energy level noted on the graph. So every extra mouthful of feed you can get into those cows is like gravy, for the cows and you!

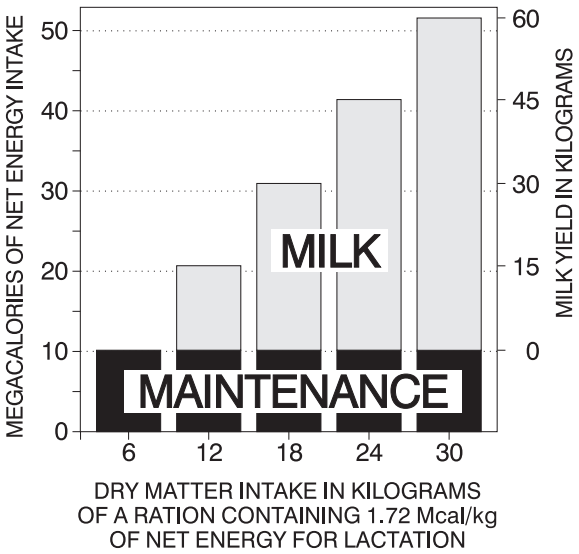
No matter how much your cows are eating now, the potential for increased profitability makes it worthwhile to look at increasing their intake. Here is a checklist of factors to consider :

Facilities

✓ Cows need about two linear feet of bunkspace each, if they are all expected to eat at the same time. With a TMR and good feedbunk management, a foot is plenty.

✓ During a recent speaking tour through Alberta, Gordon Jones pointed out several features of feeder design that can affect intake :

- Because of social interactions, cows will spend about 25% less time at a head-to-head feeder than they will at a fenceline feeder and this will be reflected in reduced intake. When cows are facing one another, feeders should be at least 10 feet apart.
- Eating in the natural, head-down grazing position, with the feed 4 to 6 inches above foot height, results in greater saliva production and higher consumption compared with eating from a raised feeder.
- Cows ate 10% more grain from a feeder with a smooth floor than from one with a rough surface. Rough, pitted surfaces accumulate stale feed and are difficult to clean.
- Because cows have poor depth perception, fear of light/dark patterns and deep, dark feeders discourages consumption. Light coloured tile or 'puck board' feedbunk liners are recommended.
- Feedbunk fencing should be designed to allow easy access to feed. A fenceline bar or cable should be placed at least 48 inches above foot height to prevent interference with intake.



The effect of dry matter intake on production. The proportion of total intake available for production increases with increasing intake, making high production more energy efficient.

✓ The distance between loafing area, waterers and feed can influence intake. The high intake herd mentioned earlier is in a tie-stall barn, with drinking fountains shared by two adjacent cows. At the other extreme, cows at pasture in the summer will not be consuming their high energy TMR back at the barn.

✓ Narrow passages and slippery floors may discourage cows from moving between loafing areas, feedbunks and waterers.

✓ Cow comfort is an important aspect of feed intake and digestion. Each kg of dry matter intake requires about 25-30 minutes of rumination to promote its digestion. Therefore, a cow consuming 25 kg of dry matter should be spending about 12.5 hours a day chewing her cud in a comfortable lying position. When more than a third of the cows in a herd are found standing, or lying in alleyways, the design of their comfort stalls should be questioned.

Feeding strategies

✓ The eating patterns of individual cows vary, but most will consume 4 to 6 major meals and about the same number of smaller 'snacks' every day. The number of times they eat and the amount they consume at each visit to the bunk can be influenced by :

- the availability of feed. Cows should have access to fresh feed at least 20 hours a day.
- feed timing. Most cows look for feed and water immediately after milking. This is the time when bunks should be full of fresh feed.
- ration palatability. Fresh feed, free of moulds and off-flavours resulting from unfavourable fermentation, encourages consumption. When bunks are not cleaned regularly, stale feed and associated sour smells can inhibit intake.
- curiosity. Activity around the bunk usually provokes at least a few cows to come forward to investigate. Some producers make a habit of pushing up residual feed 3 or 4 times a day. Others top dress a taste of wet beet pulp on the mixed ration to stimulate intake of another mouthful.

✓ Water availability goes hand-in-hand with access to feed. British studies have shown that a 40% reduction in water intake can result in a 16% to 24% decrease in ration dry matter intake. Limited access to a single waterer may restrict intake, even in a small herd. Low water flow and contaminated or dirty waterers can also reduce consumption.

"The objective must be not to feed a hungry cow, but to challenge an already full cow to eat a bit more."

Ration factors

✓ forage quality. Low quality forage is slowly digested because the fibre fraction is heavily lignified. Slow digestion limits intake by reducing the rate of passage of feed through the rumen.

✓ nutrient balance. The digestion of feed in the rumen depends on a balanced supply of degradable protein and fermentable energy. Well balanced rations increase the rate of rumen fermentation and microbial growth and promote intake.

✓ moisture content. Depressed intake is often associated with ration moisture levels over about 45%. This is probably not due to the moisture itself, but a result of off-flavours produced by unfavourable fermentations in wet silages.

✓ physical form. Forages which are chopped too short do not provide enough 'structure' to stimulate optimum chewing, rumination and salivation. Grains which are ground very fine may provoke rapid increases in rumen acid production. Inadequate salivation and rapid acid production result in low rumen pH, reduced fibre degradation and depressed intake.

Social interaction

✓ Dominant cows may interfere with the feed and water consumption of subordinate animals through intimidation. This was the reason proposed for the reduced feeding time at head-to-head feeders, mentioned earlier. A 'boss' cow can often be seen standing guard at a water trough or computer feed station, preventing access by other cows.

✓ A study at Purdue University demonstrated a production increase of 5-10% for first calf heifers housed and fed separately from the older cows. This was a direct result of a 10-15% increase in the time they spent eating.

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