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Dry matter intake and dairy cows: Is higher intake always better?

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Dairy producers in the US have been challenged by steadily increasing feed costs over the past 5 to 7 years. Diversion of corn grain to motor fuel ethanol production in the Midwest, increased hay exports to pacific rim countries from the West and a reduced amount of farm land due to urbanization have combined to create feed/food shortages which have driven up the cost of virtually all feeds for housed animal systems in the USA. As never before, US dairy operators have had to work hard to reduce their reliance on purchased feeds while looking at new unconventional feeds to meet the nutrient needs of their cattle. And if this is not bad enough, it will likely get worse as cellulose based motor fuel ethanol distillation ramps up and more agricultural land is diverted to growing crops with high cellulose levels in a process which, unlike corn based motor fuel distillation which at least creates 1 lb of by-product per 3 lbs of corn grain, will create no by-product feeds at all!

While feed prices have steadily increased over the past 5 to 7 years, milk prices have gyrated wildly with price swings in the range of 100%. Many dairy producers have reacted by contracting some (or a lot) of their milk through one or more of the various mechanisms available in the futures market. However many dairy producers, reluctant to lose the benefits of high milk prices, have chosen not to contract any milk and, in so doing, opened themselves up to the full pain of low milk prices. As a result, there have been times in the recent past when the milk/feed price ratio has been ruinously low.

How do dairy farms tend handle low milk/diet price ratios?

The year 2009 was disastrous for all dairy producers, except the very few who had covered a high proportion of their milk sales through some form of a futures contract. So how did the bulk of dairy farmers deal with the pain? Many removed feed additives, even low cost ones where the cost/benefit ratio still

favored their use. Other dairies 'cheapened' their rations by removing as much of the purchased ingredients as possible, including grains, protein meals and even mineral premixes, in favor of feeds which were already bought and paid for, and on site. When you have no money, it is tough to pay bills. However the impact, in general, was lower milk production and increased mobilization of body fat to support milk production. There was a lot of cow fat used by US cows in 2009 to support milk production, and keep their owners' fiscal nose above water. But one thing that very very few dairy farms did was change their basic management strategies (philosophies) of animal management to convince their lactating cows to eat less feed. Was this the right decision?

What is our strategy on dry matter intake of lactating dairy cows?

Dairy farmers tend to have two overriding principles which they adhere to in feeding lactating dairy cows. The first is that they do not like bunks to be empty since empty bunks lead to hungry cows that tend to eat too much when presented with fresh diet. This can lead to acidosis and abomasal displacement and other unhappy events, as well as increase conflict among cows in overstocked corrals. None of this is good. The second principle is that high dry matter intake is good and that the higher the dry matter intake, the better. But is this true? Most dairy farmers do everything that they can to maximize dry matter intake based upon diet ingredient and nutrient profiles, as well as animal management strategies. It is a sort of underlying philosophy of dairy cattle production which underpins the industry. However what is often not fully recognized is that by doing everything that you can to push up dry matter intake of your cows, you are simultaneously doing everything that you can to push down diet digestibility, primarily due to a faster rate of passage of feed through the gut. Historically, where high milk/feed price ratios were the norm, this virtually always made sense since no matter how much you dropped diet digestibility by convincing the cows to eat another pound of dry matter, the small decrease in digestibility (% of diet) was compensated by an increased net digestibility of the diet (lbs/d) which led to increased milk yield which, when milk/feed price ratios were high, meant that the last pound of milk that you could wring out of the cows was always profitable. However in a time, such as 2009, when milk/feed price ratios were perilously low, that last pound of milk from the cows, obtained by convincing the cows to consume that last pound of dry matter, was not profitable (unless you had enough of your milk contracted at a high price).

A potential dry matter intake strategy of lactating dairy cows when times are bad

In 2009, times were bad because milk/feed price ratios were very very low. A strategy to deal with this situation is to increase feed efficiency by convincing your cows to eat less since, by eating less, digestibility (as a % of the ration) will go up. However attempting to do this by simply reducing feeding levels will be disastrous, for the reasons outlined above. But are there practices you can follow to push intake down ~10% in order to increase feed efficiency without harming the cows and/or causing health issues? There are, but it means a sort of running of the movie backwards to think about the practices which you follow to push dry matter intake up. Here are a few suggestions:

- increase the moisture level of the TMR because, as the moisture level of the TMR pushes above 50%, voluntary feed intake will decline.
- increase the fiber level of the diet since a higher dietary fiber level will suppress intake.
 - avoid dietary ingredients, such as fresh chops, which you know by experience will stimulate intake.
 - reduce the number of daily pushups because every time that you push up feed you stimulate a widespread bout of eating activity.
 - in freestall dairies, don't lock the cows in the freestalls because cows allowed access to outside drylots eat less.
 - increase corral overstocking a bit because intake will decline in all cows (although more care needs to be placed on removing health disadvantaged cows which can end up with access to only the picked over TMR).

I know, I know, this advice seems to be backwards to 'good' management practices and, in reality, it is – at least if your objective is to maximize milk yield at all costs. However those 'good' practices are no longer good if your objective is to maximize feed efficiency. When milk/feed price ratios tank, and the banker is knocking at the door, a good strategy can become a bad strategy and a bad strategy can become a good strategy.

And finally . . .

But, but, but, but - a word of caution is to proceed carefully and slowly and incrementally bit by bit in making changes, and track feed intake and milk yield and feed efficiency by corral weekly. In addition, it is critical that a trained person body score a subgroup of cows in each corral at least monthly to be certain that your diet and/or management changes are not leading to excessive loss of body condition. Keep in mind that groups of cows losing a lot of body condition can have fabulously good, and completely unsustainable, feed efficiencies.

Tough times in the dairy industry suggest that all practices need be re-evaluated and, where sensible, tweaked to maximize farm profitability (or minimize farm losses). While we all hope that 2009 conditions will not re-visit the US dairy industry, we all know that it could happen again. Changing your management practices to convince your lactating cows to reduce feed intake in order to increase feed efficiency may be a strategy to consider when the wheels are coming off due to ruinously low milk/feed price ratios.

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