

## TEST FOR, AND TREAT KETOSIS EARLY IN DAIRY CATTLE

It is easy for cows to slip into a negative energy balance and lose condition

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Years ago, I would lean over the feed bunk and smell the breath of a ketosis-suspect dairy cow. It convinced me that it had either bad breath or glue (acetone) breathing ketosis. Since then, I've come a long way.

Dairy nutritionists like myself and dairy producers now have access to modern BHB (Beta-hydroxybutyrate) milk tests through regular CanWest DHI testing or from on-farm keto-testing kits. By detecting ketosis in problematic cows and implementing strong transition cow-feeding and management programs, we should be able to reduce early lactation ketosis, which is detrimental to long-term dairy cow health and performance.

### Don't Ignore it

Ignoring a ketosis cow doesn't solve the problem, either. Untreated clinical ketosis include a rapid drop in body condition, loss of appetite, decreased milk production, and yes, acetone-smelling breath. Most veterinarians will tell us that such clinical ketosis is relatively rare in dairy cows with the majority of ketosis symptoms in afflicted cows being hidden or subclinical in nature.

Rather, these latter cows will suffer from a higher incidence of displaced abomasums, retained placentas, mastitis, or weaken immune system. Subclinical ketosis has also been linked to milk fever and reproductive problems. **Cows with subclinical ketosis lose about 25 per cent of their potential milk production per lactation.**

Early lactation cows are the most vulnerable to either type of ketosis because, by nature, they cannot meet all their energy requirements of maintenance and high milk production from just their diet. Therefore they are drawn into a state of "negative energy balance" (NEB) for about five to six weeks after calving.

Even well-transitioned cows experience a period of NEB, but they tend to have good post-partum dry matter intakes, which draws a lot of energy from their diets and as a result mobilize a health amount of body fat. This fat energy helps bridge this NEB gap during their early period of peak milk production. By comparison, ketosis-affected cows often have limited feed intakes or energy-unbalanced diets, which leads to high life-threatening rates of fat-breakdown.

Serum (blood) concentrations of NEFAs and ketone bodies such as Beta-hydroxybutyrate (BHB), can determine a potential ketosis threat (and associated severity of NEB) in a chosen group of early lactation cows.

It's this BHB concept that also underlies the milk keto-screen available by DHI testing as an indicator of ketosis in dairy cows. Since, the first few weeks is considered the highest ketosis risk period in early lactation cows, DHI tests the milk samples of cows between five to 21 days in milk (DIM) and DIM 22 to 42 days. They mark and report "positives" of these samples, which exceed a BHB threshold of 0.15 mmol/l. Their report also shows the percentage of cows that have elevated BHB levels for that reported month as well as those from past three-month increments.

### Indicator Test

As a general indicator of subclinical ketosis, DHI suggests if 20 per cent or more cows' milk samples in a particular herd test "positive," it is designated a high ketosis status and might indicate a possible ketosis problem in any individual herd. On a similar note, Ontario DHI records (43,321 milk samples from June to September, 2014) have illustrated herd level prevalence of subclinical ketosis of 30.5 per cent in cows five to 21 DIM and of 14.7 per cent of cows DIM 22 to 42. Similar Quebec DHI results were reported.

Although identification of subclinical ketosis in lactating dairy cows is helpful and warrants corrective actions, preventing ketosis in any given herd is strongly recommended. One should implement a proper transition diet (three weeks before calving and three weeks post-partum) in order to promote optimum dry matter intake and body condition scores in susceptible dairy cows.

Initially, a good close-up dry cow diet should be palatable which ensures that pre-partum cows are consuming about 12 kg of dry feed daily. The diet should contain moderate energy forages with some room for lead-feeding grain. Close-up dry cows (even fat cows) should not be allowed to lose bodyweight in this period.

Once cows calve, early lactation rations should promote good rumen function (re: effective forage fiber) and yet carry enough available dietary energy to support increasing milk production. The goal is to build up dry matter intake in early lactation cows to about 3.5 to 4.0 per cent of their bodyweight at about nine to 10 weeks after calving.

Tying it together is good bunk management with all good feeding programs set up for both the close-up and early lactation dairy cows. This means that each transition cow should have enough bunk space and adequate time to eat. Matching the energy demands with a dairy cow's energy needs in the close-up and early stages of lactation is critical in minimizing rapid body fat mobilization and ketosis. **Alongside, we should have a ketosis monitoring program (such as DHI) that identifies subclinical cases as well as our progress in reducing ketosis.**

Your program might even include my glue-breath test!

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