

Ketone Testing in Dairy Cows

The period between calving and end of lactation is a critical time period that strongly correlates with the health and milk production of the cow. During this time, cows can slip into a ketotic state, putting them in risk of decreased milk yield, impaired reproductive performance, and higher risk of more severe clinical ketosis, all ultimately leading to economic loss.¹

Ketosis, arguably the most important metabolic disease in dairy herds in the US, occurs when there is a negative energy balance during lactation.^{2,3} This happens because the demand on the body during lactation exceeds the energy intake of the cow. The key to preventing ketosis before it becomes a clinical problem is checking cow BHBA levels through the lactation period and providing nutritional support for the herd.³

The gold standard for ketosis testing is blood Beta-Hydroxybutyrate or more simply, blood BHBA.^{1,2} Subclinical levels of ketosis occur between 1.2 – 1.4 mmol/L. This is an important threshold for dairy cows to detect advancing cases of ketosis and can be used to predict health risks during early lactation.^{2,3,4}



Did you know...

- Most clinical cases of ketosis occur in the 2-3 weeks after calving⁵
- Milk yields can decrease up to 4.6 lb. a day in the first week of lactation with subclinical ketosis⁵
- Cows with subclinical ketosis (1.2 – 1.4 mmol/L) were 3x more likely to be removed from the herd⁵
- The gold standard for testing ketones in dairy cows is blood BHBA^{1,2}

References:

- 1 Iwersen, M., et al. "Evaluation of an electronic cowside test to detect subclinical ketosis in dairy cows." *Journal of Dairy Science* 92.6 (2009): 2618-2624.
- 2 Duffield, T. F., et al. "Impact of hyperketonemia in early lactation dairy cows on health and production." *Journal of Dairy Science* 92.2 (2009): 571-580.
- 3 Oetzel, Garrett R. "Herd-level ketosis—diagnosis and risk factors." *Proceedings of the 40th annual conference of bovine practitioners*, Vancouver, Canada. 2007.
- 4 Ketosis in Cattle: Introduction (Acetonemia Ketonemia). (2013). *The Merck Veterinary Manual*.
- 5 Oetzel, G. R. "Understanding the impact of subclinical ketosis." (2015).