



Acidosis

Causes & Remedies

Acidosis is the number 1 metabolic disorder in dairy cows. We cannot prevent rumen pH fluctuations, but can certainly manage them to reduce their impact on cow health and productivity. Following closely on the heels of underfeeding, acidosis is the next major cause of lost profit from underperforming cows.

Acidosis is the result of rumen pH declines. A pH of 6.2 is a fairly neutral rumen which will support good digestion and feed utilization. A rumen pH of 5.8 is the threshold of acidosis. Every time a cow eats, rumen pH will fall to 5.8 or lower, from digestion producing propionic acid (this is the VFA that delivers energy to the cow and most responsible for volume of milk). The measure of how damaging these pH falls are, is determined by the length of time that rumen pH remains below 5.8. Notably, fibre digestion ceases at a rumen pH of 5.8, so feed conversion efficiency falls away rapidly beyond this point.

The problem arises when excessive propionate accumulates in the rumen lowering pH and allowing the growth of lactate-producing bacteria. Lactate is 10 times stronger than any other acid produced in the rumen. Obviously, the severity of pH drops and the time factor, are the real issue for us as dairy farmers. We believe ulcerated rumens, caused by acidosis, are frequently to blame in sudden, "unexplained" deaths.

Like most disease in dairy cattle, acidosis has two levels of severity, clinical and the real profit thief, sub-clinical. Clinical acidosis should be easily observed by the dairy farmer and addressed or the cow will die fairly quickly. Sub-clinical acidosis can go reasonably unnoticed, like sub-clinical states of mastitis, metritis and ketosis. All of these represent major financial losses in dairy farming due to being unnoticed and not addressed or remedied. Incidentally, acidosis is frequently the precursor to all these and other diseases such as salmonella.

Acidosis reduces a cow's immune system very significantly, exposing her to bacterial infection through inability to manage bacterial load ingested with pasture or other feeds which have bacteria naturally on them. Recent research conducted in the USA demonstrated a direct link between rumen pH status and cell count. A majority of lame cows are also a direct result of acidosis. Another US study revealed 20% of lactating cows had sub-clinical acidosis. This study was conducted in herds feeding TMR's (Total Mixed Ration) to reduce this very problem. I shudder to think what a similar study of cows in Australian "slug feeding" systems would reveal.

How can we know if our cows have acidosis? Low milkfat test – below 3.3. Low milk protein. Sore hooves – laminitis. Diarrhoea. Limited cud chewing – less than 50% of cows lying down not chewing their cud. Reduced milk production compared to what the ration should support. Variation in manure in the herd from firm/good texture (stiff whipped cream) to diarrhoea. Gas bubbles in manure. Undigested grass and milled grain in manure.

Cows never lie! If we observe our cows well they will tell us how to make them highly productive and profitable. Manure is always my first interest when I walk into a paddock to look at a herd.

Strategies to avoid rumen acidosis: Essentially, rumen acidosis is caused by rapidly fermented carbohydrates, particularly sugars and starches. Obviously high grain feeding, meals of 4 or more kgs at a time will create this accumulation of rumen acid due to the cow's inability to utilize it as fast as it is produced. Good grazing quality pasture can be just as readily fermentable creating the same low pH conditions. I am convinced from observation, that pasture is probably our greatest cause of acidosis in Australian grazing based dairy farming.

My goal for grain feeding is 5 to 6 kgs/cow/day. Beyond this level we lose efficiency of grain's benefits, and beyond this level we are generally trying to compensate poor forage management.

The second tool for managing rumen pH is 'effective fibre'. I recommend 2 kgs of oaten hay/cow/day for the whole lactation purely as a rumen conditioner, to maintain good 'rumen mat'. Good rumen mat is our best insurance against acidosis, and for optimum feed conversion efficiency. It is paramount to get cows to eat 2 kgs of oaten hay prior to grazing turnip/rape crop in summer to ever hope to convert the valuable energy in crop to milk, let alone minimise rumen acidosis.

Good rumen mat will also stimulate cud chewing which is nature's way of managing rumen pH through saliva production. Good saliva production needs to be supported by feeding salt in the grain mix or free choice to both provide 'natural' Bicarb in saliva, and encourage water consumption which also dilutes rumen acid accumulations. Higher feed intake, and allowing cows the opportunity to eat as many 'meals' in a day as possible – 9 to 14 per day will also reduce acidosis risk.

Top US dairies actually do time budgets for their cows to optimise productivity. The idea being, the system must fit the cow not the reverse. A typical time budget: eating 3 to 5 hrs/day, ruminating 7 to 10 hrs/day, drinking 30 mins/day, milking 2 to 3 hrs/day, lying/resting 10 to 12 hrs/day. Does your herd fit this schedule? Vitamin "R"- rest, contributes significantly through rumination (cud chewing) to reducing acidosis.

Finally, feed additives: Ionophores such as Rumensin, particularly in combination with Tylan through managing lactate producing bacteria minimise acidosis risk in sound rations. As above, salt and MagOx also have a role in acidosis control.

