

Sub Acute Ruminal Acidosis

(Yield, Infertility, Composition and Immunity)

For the lactating dairy cow to maximise performance a healthy rumen is critical. About 70-80% of the cows energy comes from the volatile fatty acids produced by the fermentation of the ingested food by the bacteria in the rumen. So the true value of any feed is determined by a proper functioning rumen. In a healthy rumen the pH will be between 6.0-6.2 and this favours the optimum functioning of the micro-organisms particularly those that digest fibre, yes there will be fluctuations below this daily with healthy cows for short periods. At the same time the micro-organisms are very sensitive to pH changes, numbers decreasing as the pH drops below pH 6, falling below this acidosis will result (Table 1.)

Table 1: Effect of Rumen pH

Rumen pH	Effect
6 -7	Normal
< 5.8	SARA
<5.2	Acute Acidosis
<4	Death

Production is acidogenic that is acid will be produced. The amount of acid will depend on the feeds used, their level of inclusion and the ability of the rumen to buffer itself.

Dietary factors leading to acidosis are highlighted in table 2.

Table 2:

Dietary factors leading to acidosis

- Level of fermentable carbohydrates
- How finely chopped forages are
- Low structural fibre

- Grass silages with a high PAL (potential acid loading)
- Over mixed TMR'S
- High concentrate : forage ratio
- High digestible grass – high in sugars low in structural fibre

Sub-acute ruminal acidosis (SARA) which is more common to all herds occurs when the rumen pH drops below 5.8 this is sub-optimal for dry matter intake. With SARA there will be **fluctuations with intake and reduced performance** in milk yield and fertility. *British research 2010 stated that diets with high levels of fermentable carbohydrates adversely affected development of the embryo at 7-10 days post-conception.* The cow signals that will indicate that there is a potential issue with SARA are outlined in table 3.

Table 3:

Cow signals relating to SARA

- Low milk fat
- Rumen fill - poor
- Diarrhoea
- Dung with gas bubbles
- Undigested fibre particles in the dung
- Laminitis
- Increased water intake

For most farmers reading this they will say this only relates to cows fed on high concentrate diets and will not be an issue in a grass based system where the cows can look after themselves.

This has proven not to be the case as research carried out by University College Dublin in 2006 by Finbar Mulligan, Luke O'Grady and Michael Doherty with cows 80-150 days in milk on grass showed that 58% of cows had a rumen pH < pH 5.8 which was sub-optimal for **dry matter intake**, a 11% were < pH 5.5.

In the grazing season of 2010 this was very noticeable from mid-April to mid-July peaking in May, where **the butter fat percentage was under the milk protein percentage**. What one needs to be careful of here is the average butter fat% reading as an indicator which in a case history on a farm in April was 3.7% but on examining the milk recording sheet up to 32% of cows were at 3.2%, very low. Assess rumen fill and the dung consistency, the signals are there. A cow consuming 17kg DM of grass with sugar readings of 15% - 21% is consuming a diet equivalent to 28% - 38% barley, low in structural fibre, this is a diet high in fermentable carbohydrates.

Prevention

The consequences of acidosis are serious and it is not confined to indoor diets it is also an issue when grazing high quality grass which is necessary for performance, but a balanced diet will maximise performance. It is important to note that acidosis yes starts in the rumen but excess acid gets absorbed into the blood so any preventative measure needs to address both. In the indoor period for the lactating cow ensure the forages are high in digestibility and palatability balanced for structural fibre and buffering capacity. This also applies to the grass. Buffers that help sodium bicarbonate, magnesium oxide and yeast.

Nutribio have formulated Nutri-Buff 270 to enhance rumen health and to address the costly issues associated with SARA (yield, composition, infertility and immunity)

Contact your feed supplier or Nutribio directly on 021 4507303 for further details.