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Rumen Acidosis or Grain Poisoning.

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When ruminants are fed a diet high in readily fermentable carbohydrates a condition known as rumen acidosis or grain poisoning can occur. This condition can cause bloat, lameness and liver abscess. If the conditions causing the acidosis persist a runaway chain of events can lead to clinical acidosis where the blood becomes acidic and the beast dies. Most commonly acidosis is present as a sub clinical condition causing lost productivity and unhealthy cattle.

The normal pH of the rumen is between 6 and 7 depending on the diet. If a highly fermentable feed is introduced without the opportunity for the beast to adapt then the rumen bacteria will ferment this to a strong organic acid called lactic acid. This will cause the pH of the rumen to drop which makes conditions unfavourable for the bacteria that utilise lactic acid and increase the production of lactic acid by other bacteria. As the pH drops the lactic acid producing bacteria come to dominate and a vicious cycle ensues. The pH of the rumen falls below 5.5 causing the death of some bacteria and the proliferation of other pathogenic bacteria. This in turn causes bloat and damage to the rumen wall. The damage to the rumen wall allows pathogenic bacteria to escape from the rumen and enter the circulation where it goes to the liver and causes liver abscesses. The digestion of forage in an acidic rumen stops completely.

The stress caused by this chain of events interferes with blood flow to the peripheral organs particularly the hooves. This causes lowered oxygen and nutrient supply to the hoof resulting in damage to the lamina which is the area of hoof growth. This in turn causes laminitis and lameness. Other factors such as stress and environment also contribute to the incidence of laminitis but acidosis is a major predisposing cause.

A feed that is lower in starch or sugars prevents the occurrence of acidosis. The Cattle King protein meal having very low starch levels is therefore an ideal feed for supplementing bulls and growing stock on pasture. When a high starch diet is to be fed a rumen modifier such as Rumensin and the addition of Tylan to lower the incidence of liver abscess is necessary. A buffer such as bentonite or sodium bicarbonate should also be added particularly in the start up diet. Higher levels of forage in the diet increase the production of saliva. This saliva act as a buffer in the rumen, helping to stop the drop in pH. Introducing grain slowly allows time for the bacteria that utilise lactic acid to build up. Once cattle are adapted to high levels of starch the pH of the rumen does not shift so much on feeding. However practices such as irregular feeding and stock off feed due to wet weather can still cause acidosis.

When feeding grain in the paddock, rumen pH is very important. Forages are digested best at higher pH but grain causes a drop in pH. A slow adaptation period and not letting the stock run out of grain are vitally important. Ensuring an adequate supply of roughage (this can be standing grass) and using a rumen modifier will also help in this situation. Bridging in self feeders which can cause stock to run out of feed prematurely can also cause problems.

The five key areas to prevent acidosis are introduce grain slowly, ensure adequate roughage is available, use a buffer particularly in the start up phase, add a rumen modifier and ensure stock do not run out of feed. A low starch feed such as the protein meal will also avoid these potential problems.