

# Grain Poisoning

Most of the energy and protein cattle and sheep need every day is produced in the rumen as a by-product of the continuous microbial fermentation of grasses, grains and supplemented feeds.

The type and quality of feed provided to sheep and cattle has a direct effect on the rate of fermentation in the rumen. It also directly affects both the type and quantity of by-products the animal uses to drive its growth and production.

## How?

Cereal grains and other feeds containing starch produce very high rates of rumen fermentation and large amounts of a particularly valuable compound called propionate. Propionate is an excellent source of energy for cattle and sheep and is important in helping to maximise feed conversion efficiency.

Unfortunately, feeds containing starch also cause an increase in the rate of production of other less desirable compounds in the rumen including lactic acid.

## Why? (Disease development and primary/tertiary effects)

Even at quite low levels, lactic acid will reduce the numbers and activity of microbes present in the rumen and will significantly restrict the animals ability to use their feed efficiently.

In very extreme cases the amount of lactic acid produced in the rumen is high enough to cause massive and permanent damage to the lining of both the rumen and gastrointestinal tract, impair the function of major organs including the liver and may lead to death from poisoning, shock and dehydration.

This extreme accumulation of lactic acid in the rumen is commonly called "grain poisoning" or acidosis. In a herd or flock only about 5% of animals show obvious or primary signs of poisoning due to excess lactic acid production. The majority of the mob will experience the ongoing tertiary (or hidden) effects of reduced feed conversion efficiency, weight gain and reproductive performance. Even where no obvious signs are seen in the herd or flock the tertiary effects will still be present.

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**These losses in both efficiency of feed conversion and performance are caused by damaged tissue and organs, particularly:**

- Damage to rumen lining allowing bacteria to pass through into the bloodstream, which nearly always relocate to other organs
- Damaged organs due to bacterial abscessation, especially the liver and lungs. These abscesses become the source of ongoing infections and divert essential nutrients required for production into fighting infections
- Dead bacteria also release toxins which often result in blood vessel damage in small blood vessels such as inside the hoof.

These effects result in recurring lameness, a permanent drop in the ability to absorb nutrients and a poorly functioning immune system. This impacts on growth, reproductive ability and the ability to effectively fight diseases for the rest of their lives.

Animals which have had an adverse reaction to feedstuffs may be reluctant to go back onto this feed source.

Lifetime efficiency of feed conversion can be affected by a single bout of grain poisoning. Feed conversion efficiency is directly related to the inability to optimise stocking rates on existing feed, and thus impacts on total farm profitability.

## HOW TO MANAGE THE PROCESS WHEN STARCHY FEEDS ARE FED

1. Use **ELMS Intensive Sheep or Cattle Pellets** - these have been specifically designed to prevent tertiary and primary effects of grain poisoning with outstanding buffering properties. For further information see your local **ELMS Manager**.
2. Introduce grain gradually over 7 days – increase volumes by 10 - 20% per day until at full rate by 7 days.

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