Feeding The Rumen (Part 1 of the Bunk Management Series)

When we feed cattle in the feedyard, we need to remember that we are really feeding the rumen.

The rumen contains a population of bacteria, protozoa and fungi that breakdown feedstuffs and converts them into nutrients that the cattle can use.

Microbes produce volatile fatty acids (VFAs) which are the primary energy source for cattle.

Microbes consume nitrogen in the rumen for metabolism and reproduction. When they die, the microbes then become a primary protein source for the cattle when they reach the true stomach.

Different microbes produce different volatile fatty acids:

- Propionic acid is the most efficient energy source for the cattle
- Butyric acid provides energy to the rumen wall, assisting in nutrient absorption
- Acetic acid is most common, but not an efficient energy source
- Lactic acid is not a VFA, but it is a strong acid produced in the rumen by s. bovis bacteria and is the cause of rumen acidosis.

Changes in ration ingredients, or in the amounts fed, can change the rumen microbe population

- With a minor change, efficiency will be lost as the rumen uses nutrients to change the microbe population instead of making these nutrients available to the cattle for maintenance and gain.
- In a severe case, increased lactic acid production can cause irreparable harm to the villi lining the rumen wall, reducing the ability to absorb & transfer nutrients to the blood stream.

Healthy Ruminal Papillae

Affects of Acidosis on Rumen

There are several other problems that can result from sudden changes to the rumen environment:

- Liver abscesses are caused by rumen bacteria that pass through damaged villi into the bloodstream and are caught in the liver.
- Damaged rumen villi can allow histamines and bacteria to pass from the rumen into the bloodstream, which travel to the feet and cause founder.
- Sudden ration changes can increase rumen fermentation which can lead to frothy bloat
- A sudden increase in feed intake or energy concentration can lead to a population explosion of clostridium organisms in the rumen. Toxins produced by the clostridium can be absorbed into the bloodstream and cause sudden death in cattle.

Maintaining a steady rumen microbe population is essential to maintaining a steady supply of energy and protein to the cattle so that they can grow efficiently. Steady deliveries of a consistent ration are the key to maintaining a steady rumen microbe population.

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