

## Alkaline Bloat (Wheat Pasture Bloat)

The most common ailment that occurs in cattle feeding is bloat. Bloat accounts for 40.50% of all nutritional diseases and ailments. Of the death losses due to nutritional deficiency diseases and ailments, 36% were attributed to bloat.<sup>1</sup>

There are basically two forms of bloat, each associated with a particular feeding regime. Acid bloat or acidosis results from the formation of excess methane gas due to the production of excess lactic acid from rations high in starch-based carbohydrates. Acidosis most commonly occurs in high concentrate/low roughage feedlot diets. Alkaline bloat or alkalosis is most common on lush, green, immaturely harvested or grazed forages such as wheat pasture, and is caused by the interaction of several factors. Alkalosis is the most complicated and difficult to treat, and as acidosis can be treated with some of the same methods as alkalosis, the following discussion will focus on alkalosis.

Alkaline bloat or alkalosis can be a major problem when grazing wheat or legumes. Fast growing grasses and legumes produce a substance called saponins that are characterized by properties that form colloidal solutions and produce soapy lathers, especially when mixed with water (thus, the problem is exacerbated by early morning dews or light rain). High surface tension of these saponins causes the entrapment of ammonia gas produced from the breakdown of excess protein by rumen microorganisms (immature forages have a comparatively high protein content compared to mature forages). As surface

tension continues to increase, rumen fluid foams, forming strong walled bubbles. This prohibits the animal from belching and the gas continues to build until the animal cannot breathe and it dies of suffocation or anoxia. High levels of NPN or nitrates can intensify the effect.

There are basically three treatment solutions to the problem of alkaline bloat. One is to reduce the surface tension caused by the saponins. Fat acts to chemically dissolve the saponin layer, acting as a surfactant, reducing the surface tension of the rumen fluid.

The second treatment solution is the elimination of the ammonia gas. The most effective method of decreasing the accumulation of ammonia gas is the addition of an acid to combine with the ammonia, thus effectively neutralizing the pH of the rumen. Neutralizing the ammonia gas in the rumen and dissolves the saponin layer, decreasing the incidence and severity of bloat.

The final step is to address the undesirable effects of excess protein that is the source of the ammonia gas. This excess protein can be addressed by simply raising the energy level of the ration, reducing the de-aminization of the protein by rumen microorganisms and decreasing the production of ammonia gas. The net effect is increased production and improved animal health.

MIX 30 Liquid Feed contains 10% fat. MIX 30 Liquid Feed is also slightly acidic and contains a readily available source of energy in the form of carbohydrate for utilization as an energy source by the rumen forage microorganisms. MIX 30 Liquid Feed should be an integral part of any wheat grazing program.

<sup>1</sup>M.E. Ensminger; Beef Cattle Science, p. 520, 1976.



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