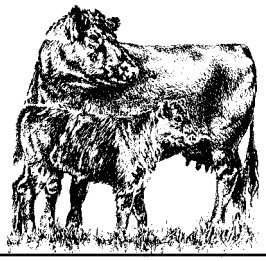

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Animal Health Section 625

Bloat Prevention and Treatment

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Bloat is a form of indigestion marked by an abnormal distention of the rumen caused by accumulated gas. Gases produced in the normal rumen fermentation process are usually eructated or "belched up." When bloating occurs, these gases cannot escape. They continue to build up and cause severe distention of the abdomen, compression of the heart and lungs, and eventually death due to suffocation.

Etiology of Bloat

The two types of bloat—dry gas and frothy—can result in many varied and complex rumen reactions. Contributing causes of bloat include an inherited tendency for bloat, certain proteins in forage, the amount and rate of roughage intake, the coarseness of the roughage, the rumen microbial population, and enlargement of the lymph nodes between lungs, which compresses the esophagus or interferes with the function of the vagus nerves after respiratory infection or an esophageal blockage. Diagnosis can only be confirmed on necropsy.

Dry gas bloat is produced by interference with the normal eructation process, as with vagus nerve damage or esophageal blockage. In dry gas bloat, a stomach tube placed into the rumen will allow the gas to be released. In a case of frothy bloat, passage of a stomach tube results in release of little or no gas and the passage of foam. Dry gas bloat usually involves only an individual animal, while frothy bloat is often a herd problem, with several animals involved.

Normally, dry gas bloat is associated with feeding high concentrate grain rations in the feedlot or presence of a mechanical obstruction. Esophageal blockage is a mechanical obstruction, which may be the result of a potato, beet, or similar foreign object such as a frozen chunk of feed lodged in the esophagus.

Frothy bloat can occur in cattle fed high grain diets due to the growth of certain slime-producing bacteria. Frothy bloat is usually associated with the ingestion of legume plants such as alfalfa or clovers. Grazing legume pastures and/or feeding legume green chop or hay under certain conditions may produce frothy bloat.

Animal susceptibility to legume-produced frothy bloat appears to be determined by the texture, composition, and microbial population of the rumen contents. The occurrence of bloat seems to be highly associated with rumen fill at the time of cattle being grazed or fed the legume.

Research has demonstrated that bloated animals have significantly higher rates of chlorophyll concentrations, buoyancy of particulate matter, and rate of gas production than non-bloated animals. Apparently, the microbial colonization and retention of particulate matter provide active inocula for promoting rapid legume digestion. Consequently, gas production is enhanced when eating is commenced, but fermentation gases become trapped by buoyant ingesta. In frothy bloat, these gases are mixed in with the rumen contents forming a stable foam. This foam cannot be eructated.

Canadian scientists have concluded that higher foam production in bloat-prone cattle could be attributed to slower rates of passage of the liquid phase of ruminal contents. These combined results clearly indicate that the ruminal passage rate is an important factor in the etiology of legume bloat. Slower clearance enhances microbial activity and promotes gas production, which contributes to stable foam formation. Rapid clearance decreases microbial gas production, enhances protein bypass, and reduces the probability of bloat.

Canadian research has demonstrated that bloaters consumed 18 to 25 percent less alfalfa on average than non-bloaters. This result contradicts the old belief that the immediate cause of bloat is animals gorging on succulent feed. Bloat is associated with a lower consumption of feed, not overfill. Early, sub-clinical signs of bloat (gastric distress) may have reduced feed intake.

Two decades of bloat research at Kamloops, British Columbia, Canada, has revealed every cultivar of alfalfa (*Medicago sativa*) tested has caused bloat. However, the