

Bloat Management in Large Ruminants

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Bloat is a condition in which there is abnormal distention of the rumen and reticulum caused by excessive accumulation of fermented gases. It occurs when animals consume young leaves and grasses, unidentified weeds, easily digestible grains, rotten vegetables and fruits. Bloat can cause unexpected death in feedlot livestock

with the fatality rate exceeding 20% in bloat-prone pastures. There is a huge financial loss due to such pastures as they cause death and there is decreased milk output in non-fatal cases.

The major gases produced in the digestive fermentation process are carbon dioxide and methane. Typically, the gas is expelled or released through belching (eructation). If the cattle are unable to release the buildup

gas, then bloat will develop. When the animal's pace of gas generation exceeds its capacity to expel the gas, bloating occurs. It causes the rumen-reticulum's pressure to build up and increases the strain on the diaphragm which lead to the various clinical signs exhibited.

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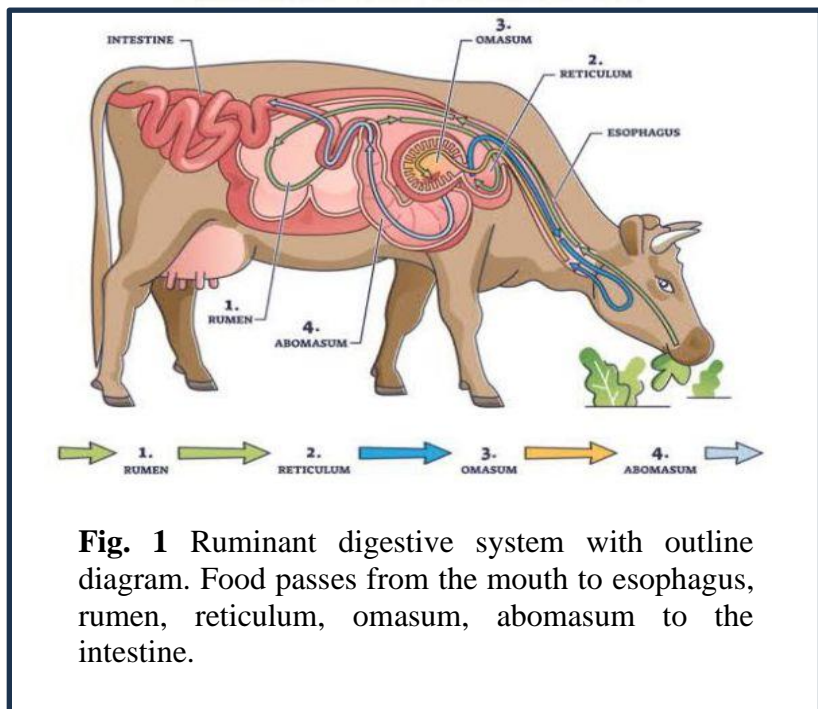


Fig. 1 Ruminant digestive system with outline diagram. Food passes from the mouth to esophagus, rumen, reticulum, omasum, abomasum to the intestine.

Causes

Frothy bloat and free gas bloat are the two forms of bloat that can occur in cattle.

Frothy bloat

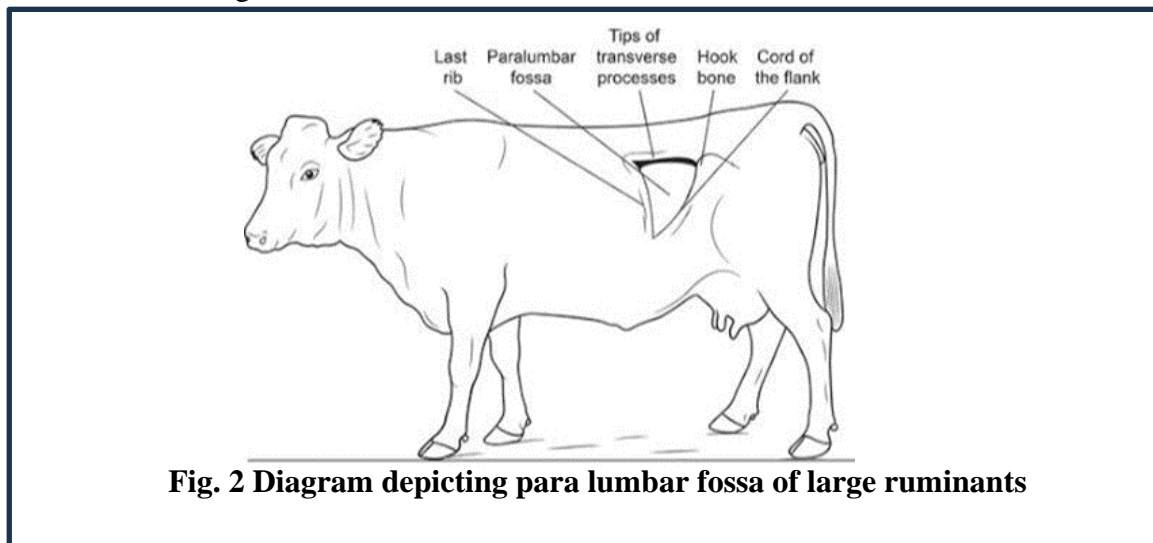
The cause of foamy bloat in cattle is nutritional and mostly occurs during rainy seasons. This is also known as feedlot bloat. When large amounts of green and leguminous plants are consumed, it will result in accumulation of froth in the rumen along with the fermentation-related gases. The excess gas buildup will result in atony of the rumen.

Free gas bloat

Free gas bloat occurs as a result of physical obstruction in the eructation process. It can be due to conditions such as a respiratory illness causing vagus nerve irritation, vagal indigestion and diaphragmatic hernia which interfere with the neural pathway that maintains the eructation reflex and inhibits the nerves governing the contraction of the ruminal wall. It can also be due to oesophagitis, stenosis of the oesophagus, choke (esophageal obstruction) and the lymph node enlargement between the lungs causing compression of the esophagus which cause physical impedance to the gas eructation.

Clinical Findings

The majority of instances are subacute as opposed to acute. Distress signs such as frequent urine and faeces, labored breathing and restless movements are obvious in severe cases. Bloat can be persistent and recurring in a small number of feedlot cattle.



The conspicuous clinical signs include anorexia, left abdominal (paralumbar fossa) distention, colic symptoms such as belly kicking, flank gazing and rolling on the ground. There may be constipation and diarrhea. A typical drum-like resonating sound is produced on percussion of the left paralumbar fossa. There may be distressed breathing due to increased intrathoracic pressure,



increased heart beat and respiration rate, ruminal atony, dehydration, and decreased urine output. Frothy bloat develops quickly, whereas free gas bloat takes longer to develop and lasts longer. If cases of bloat are not handled promptly, sometimes there is death due to asphyxia in severe cases.

Prevention of Bloat

A genetic propensity for bloating and preferences (suited to feeds/forages), certain proteins in forage, the amount and rate of intake of roughage, the coarseness of roughage, weather, the time of day, mineral deficiencies and rumen microbial population are the factors that determine the rate and extent of bloating.

- Some clover grass varieties (white, ladino, sweet and red) or other frequently grazed forages like alfalfa, fodder rape, wheat cause bloat when excessively consumed.
- Some animals may ingest a diet that is higher in bloat-inducing plants than other animals as a preference.
- Bloat is frequently related to cooler than normal temperatures. Animals may consume more forage during cool weather that can cause bloating.
- Cattle commonly bloat in the morning, presumably because this is when they eat their largest meal.

Pasture management

- All throughout the growing season, the ratio of grass to legumes should be kept in check. A mixture of grass and leguminous fodder should be grown, with not more than 50% legume forage.
- Plant legumes that do not cause bloating, such as red and sweet clover, birds foot trefoil (*Lotus corniculatus*), cicer milkvetch (*Astragalus cicer*), and sainfoin (*Onobrychis viciifolia*) can be grown. They have higher amount of tannin which slows the digestion, inhibiting foam production and bloat.
- Avoiding growing edible plants that have a high bloat potential.
- To reduce the concentration of bloat causing plants, mixed seeding is done in these areas with grass or herbicides employed.
- Fertilizing pastures with nitrogen, to encourage the growth of grass.

Supplements for livestock diets: Pasture bloat can be controlled for around 12 hours by supplementing anti-foaming substances like poloxalene. It should be fed 2-5 days before switching to pasture as a top dressing, as a part of grain mixture, as a liquid supplement or in molasses blocks.



- Bloat-reducing substances can be provided as dietary supplements or molasses blocks containing ionophores (such as Rumensin®).
- Provide enough sodium as salt in mineral supplements and limit the amount of potassium, calcium, and magnesium.
- While grazing lush, high-bloat-potential plants, provide animals unrestricted access to areas of the pasture that have been windrowed a few days before grazing. Additionally, dried grass hay or crop residues can be provided.

Grazing management

- Before allowing animals to graze high bloat-potential pastures, provide them with dry hay or grass pasture.
- A fresh pasture with a high risk of bloat-potential pastures that has recently received dew, rain or irrigation water should not be turned out to animals. Moist plants have an increased rate of intake as well as faster digestion rate.
- Rotate the paddocks later in the day to reduce moisture and boost the concentration of plant carbohydrates.
- Steer clear of grazing on legumes before they blossom. When several plants are in a younger growth stage, pay closer attention for bloat.
- Control cattle grazing to encourage them to eat low or non-bloating plants rather than only succulent top growth.
- Never let hungry animals graze high-bloat-potential pasture and eat an excessive amount at one time.
- Once grazing has started, avoid removing them from pasture or making frequent, significant changes to the type of pasture being grazed. High bloat-potential pasture grazing animals frequently experience mild bloat.

Managing feedlot bloat

- Following a few days of careful observation, remove any cattle that exhibit chronic bloating or severe bloating.
- Few practices that can be followed to reduce incidence of bloat are:
 - Mix the hay and grain after rough cutting.
 - Hay should account for 15% of the dry matter in the diet.
 - Feed at least 50% of rolled grain sorghum (milo) or whole maize.
 - On maize and grain sorghum, use a coarser grind.
 - Alfalfa hay can be exchanged for inferior legume or non-legume roughage.



- Increase the ionophore's concentration.
- Feedlot bloat caused by high-concentrate rations may typically be prevented by adding 10 to 15 percent of the ration as roughage that has been finely chopped.
- Change the ration or follow enhanced mixing to reduce separation when the grain or supplement is being separated from the roughage.
- It is advisable to administer the carminative mixture to the animal as emergency care. Field veterinarians typically favor the preparation of Simethicone and Dill oil (Bloatosil) as a 100-200 mL drench depending on the animal's body weight. Simethicone, an anti-foaming ingredient, acts as a surfactant to break up water bubbles, while dill oil, a carminative, promotes easy gastric eructation. Simethicone also eases the discomfort brought on by gas in the rumen by reducing foaming.

Conclusion

Bloat occurs when there is failure of eructation of fermentation gases produced in the rumen. If cases of bloat are not handled promptly, it may lead to death. So, prevention is the best alternative. Feedlot bloat can be easily prevented by proper feeding and grazing management. Whereas free gas bloat needs to be relieved by removal of the accumulated gas. Once the gas is relieved, the distressing clinical signs can be controlled after which the cause of the bloat can be attended to. This should be done under the supervision of a qualified veterinarian.

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