



Animal Health

Bloat and Pasture

G. L. Meerdink, DVM -Veterinary Diagnostic Lab & Extension University of Illinois

Illinois

Bloat or ruminal tympany is the abnormal extension of the rumen and reticulum caused by excessive retention of the gases of fermentation. Rumen gasses separate from the rumen contents and the gas pocket is eliminated by eructation (belching). Normally, eructation can remove much larger quantities of gas than produced at the maximum rates of fermentation. Therefore, bloat does not occur because of excessive gas production but rather from insufficient elimination.

Causes of bloat include:

- Nerve receptors surrounding the entrance into the rumen from the esophagus, the “cardia region,” detect the presence of gas and allow gas release—eructation. If fluid or foam (as in frothy bloat) contacts the cardia region, it remains firmly closed. Thus, rumen gas accumulates.
- Frothy bloat is usually related to highly digestible plants, especially legumes. Soluble leaf proteins and plant particles readily produce a stable foam-like material that obstructs the cardia and restricts eructation. Reducing foam and freeing the gas for release is difficult.
- Ruminal contractions are essential for eructation. Therefore, any injury to the nerves of the rumen or other disruptions of rumen activity can result in bloat.
- Cattle that are down for an extended time can bloat because the cardia is covered with fluid that prevents eructation. Eructation occurs when the animal stands or rolls up on the sternum after the fluid moves away from the cardia.
- Feedlot cattle on high concentrate diets might have some bloat problems related in part to reduced rumen motility. Also, some bacteria (that can proliferate in high concentrate rumen environments) are thought to produce a slime, resulting in a stable foam which impairs eructation like a frothy bloat.

Observations:

- Bloat incidence decreases when legumes begin to flower (probably due to reduced digestibility).
- Bloat is reduced when grazing is continuous and not interrupted.
- The bloat potential for legumes is not necessarily lost after a killing frost. Pasture bloat is more likely during the spring and other times when plants are young, succulent and have higher digestibility.
- It is safer to move cattle to a new pasture in the afternoon (after the dew has dried) with a rumen fill from the former forage.
- Forage maturity is a major plant factor affecting the incidence of pasture bloat. Grazing very succulent pasture, such as immature legumes in the pre-bloom stage, is the single biggest risk of bloat in cattle.
- Bloat onset may be observed within an hour after introduction to new pasture. However, cattle more commonly bloat on the second or third day (or longer) following introduction.
- Although acute death in the feedlots is unusual, mild bloat can affect performance.
- Generally, feedlot bloat is delayed which corresponds with the development of a suitable rumen environment for gas entrapment.

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Treatment:

- Removal of free gas can be done with passage of a stomach tube use of a trocar or large gauge needle inserted directly into the rumen high on the left side at the point of maximum distension. (Rumen penetration through the skin is usually avoided because of the chance of infection and peritonitis.)
- Frothy bloat is a challenge because the stomach tube, or trocar, are quickly plugged by the foamy material. (If time is of the essence, an emergency rumenotomy (surgical opening of the rumen) may be necessary to save the animal's life.)
- Anti-foaming agents such as non-toxic oils, detergents or surfactants can be used to decrease the surface tension and break down the foam to larger gas bubbles that can be removed with stomach tube or eructated. Polaxalene[®] is faster and more effective than oils and is recommended for treatment. (This may be of little value for feedlot or grain bloat.)
- Saliva is important in the prevention/reduction of bloat. Tying a stick in the mouth like a horse's bit has been used to promote saliva production. The alkalinity of saliva may assist in denaturation of the stable foam. Careful drenching with about 100 to 150 grams of baking soda (sodium bicarbonate) in water might accomplish the same end.
- Mildly bloated feedlot cattle ("swellers" or "tight") might respond to walking, which can shake the foam down and coalesce the foam into a large bubble that can be expelled.
- In any event, the treatment approach will depend on the degree of animal distress. This condition can kill quickly.

Prevention:

- Pasture bloat is unpredictable and difficult to prevent. A host of strategies have been tried to prevent the problem. The objective is to decrease the rate of rumen fermentation (which contributes to foam that prevents eructation). No one strategy works consistently, but a few ideas include:
 - Don't turn hungry cows into lush alfalfa. Fill them with dry hay before turning them out.
 - Restrict grazing time or pull cows from pasture when the first cow stops eating.
 - Do whatever is necessary to make the change to new forage as gradual as possible.
 - Turn cattle out after dew is gone; wait until afternoon when forage is dry.
 - Don't remove cows at the first sign of bloat. They'll adapt if left on the pasture.
 - Bloat often occurs with warm humid weather following a rain. The fast-growing tips of legume plants contain agents that promote the production of froth.
- Seed pastures with grass-legume mixtures. (Because of selective grazing, this surely does not guarantee prevention.)
- Oils and fats and bloat preventative agents such as Polaxalene[®] (i.e. Bloat-Guard[™]) certainly help in prevention. The challenge is getting enough into the animals at the time needed. (Individual dosing with liquids or capsules or flank application prior to turn-out has been successful.)
- Ionophores (e.g., Rumensin[®] and Bovatec[®]) aid in the reduction of bloat.