

# Prevention of Pasture Bloat In Cattle Grazing Alfalfa

**A**lfalfa is one of the most nutritious forages available and is widely used as hay or silage in the diets of beef and dairy cattle. However, the practice of grazing beef cattle on alfalfa has seen limited use because of the tendency of alfalfa to cause pasture bloat.



When grazed, alfalfa can sustain levels of beef production that are comparable to those achieved in a feedlot setting. Grazing of pure alfalfa stands has the potential to more than double the net farm income generated from mixed grass-legume pastures. Yields of 1,371 pounds of beef per acre have been reported from cattle grazing alfalfa. Because of its nutritional value, alfalfa should be a major component of any sustainable beef production system. Even if one-half of the alfalfa available in the field is wasted, or not used, its value still exceeds that of grass since it out-produces grass by that amount, and has the added benefit of fixing nitrogen to the soil.

Understanding the plant and animal physiology is important in devising a management plan for grazing alfalfa.

## Signs of Bloat

- Distension on the left side of the animal
- Frequent urination and defecation
- Kicking at its flank

## The Basics of Bloat

Cattle are ruminants – animals with four-chambered stomachs. In ruminants, digestion begins in the rumen, where bacteria and enzymes break down plant matter. Because of alfalfa's characteristics, the rate at which it is digested in the rumen can be five to ten times greater than that of most grasses. This rapid digestion reduces plant particle size more quickly and increases the movement of partially digested material from the rumen into the rest of the digestive track. This results in a greater rate of turnover of material in the rumen, enabling the animal to consume greater quantities of forage. This is responsible for the high productivity of cattle on alfalfa pasture, but is also partly responsible for bloat.

During the digestive process, gases such as carbon dioxide and methane are produced. These gases are normally released by the animal through belching. However, when digestion

occurs as rapidly as it can with alfalfa, froth or foam may form in the rumen causing the entrance to the rumen to close, preventing the animal from releasing the gas. This gas can build up, placing pressure on the lungs and can become severe enough to cause respiratory failure, leading to death.

The risk of bloat is highest when alfalfa is in vegetative to early bloom stages of growth. At this stage in its development, the cell structure and soluble protein composition of the plant makes it highly digestible. As the plant matures, cell walls thicken and soluble protein levels decrease. Once alfalfa has reached 15 to 20 per cent bloom stage, the risk of bloat drops substantially. As alfalfa enters the full bloom or post bloom stages, the rate

## Managing Alfalfa Grazing

Uniform and regular forage intake is the key to managing animals on alfalfa pastures. Management of cattle on alfalfa pasture is a dynamic art and must be done with an appreciation of the factors that can cause fluctuation in the intake of alfalfa.

Cattle should never be turned on to an alfalfa pasture until they have been fully fed first. Providing cattle with a mixture of good quality alfalfa-grass hay can fill the rumen and prevent over-consumption of fresh alfalfa when cattle are first introduced to the pasture. If rotational grazing is used, care should be taken to ensure that the initial paddock is not over-grazed to the point that animals are hungry when they are introduced into a fresh paddock.

Cattle that have not grazed alfalfa will invariably consume most of the other forages (e.g., grasses, dandelions) in the pasture along with the alfalfa. This may result in a false sense of security as cattle will seldom bloat while these alternative forages remain in the stand and the animals' intake is a mixture of forages. However, as these other forages become depleted and more alfalfa is consumed, the risk of bloat increases and is often responsible for bloat outbreaks two to three days after animals have been moved to a new pasture.

Once introduced to alfalfa, the herd should be maintained on alfalfa pasture. Animals will often

of digestion of alfalfa in the rumen slows down and the risk of bloat is further reduced.

Soluble protein levels may also be higher in the plant early in the day, leading many experienced producers to recommend that cattle only be turned into alfalfa pastures after the morning dew has dissipated.

The notion that alfalfa is bloat-safe after a frost is not true. Although the assumption may be that a good frost lowers soluble protein levels, freezing can rupture plant cell walls and increase the release of soluble protein in the plant. While the risk of bloat in frozen alfalfa likely decreases with time, frozen alfalfa should be considered bloat-reduced, not bloat-safe. As a general rule, alfalfa is safe to graze two weeks after a strong killing frost.

experience mild bloat when they are first introduced to alfalfa, but this condition can often be treated by simply keeping the animal walking until the gas dissipates. Removing the animals from the pasture and reintroducing them at a later date often only increases the risk of bloat, unless the initial grazing attempt was made in the bud or pre-bud stage of growth. A high stocking density increases competition for the alfalfa and reduces the likelihood of any one animal selectively grazing only the top portion of the plant and developing bloat.

Environmental factors that interrupt regular grazing bouts on alfalfa pasture such as storms, exceptionally hot weather or biting flies can alter intake patterns and increase the risk of bloat. During these periods of high risk, animals should be observed for symptoms of bloat more often than normal as these conditions often lead to multiple bloats or "bloat storms." Cattle generally have three to four grazing bouts per day on alfalfa pastures. Major bouts tend to occur shortly after sunrise and early in the evening. Bloat usually occurs one hour to one and one-half hours after a major grazing bout. Being familiar with the grazing patterns of the cattle can enable producers to adjust their management practices to observe the animals during times of greatest bloat risk.

## Additional Tips for Alfalfa Grazing

- Never move cattle in the morning – 2 to 5 p.m. is better.
- Moving cattle during a rain is not as dangerous as moving them two days later when it is hot. Under those conditions, alfalfa is growing rapidly and at a high risk for bloat.
- Have 'escape' pastures – the ability to take the herd off of alfalfa if conditions for grazing are very poor.
- Monitor grazing of the cattle. Observe what they are eating and see if they are mixing alfalfa with grass.
- Hay your paddocks ahead of time if need be.
- Continuous grazing of a single paddock can be dangerous as after two to three weeks of grazing, alfalfa starts to regrow.

## Bloat Prevention Technologies

Numerous technologies are presently being tested for bloat prevention. Although many of these technologies can reduce the risk of bloat, none of them can guarantee bloat-safe grazing of alfalfa. Agronomic strategies being examined include co-cropping of bloat-safe legumes such as sainfoin and birdsfoot trefoil with alfalfa. The practice of cutting the alfalfa and allowing it to wilt for 24 to 48 hours before grazing is also being explored as a method of providing additional bloat protection.

Feed and water additives are available to lower the risk of bloat. CRC bolus – rumensin can be added to feed supplements to help prevent bloat. Alfasure is a liquid product added to the water supply that is effective in preventing bloat if the water source is controlled. Alfasure or Dioctol may be administered directly into the rumen to relieve bloat in animals.



## Conclusion

The risk of bloat and the associated increased management input can be considered as costs associated with high levels of productivity and the associated profitability of grazing alfalfa. As with the production of cattle in a feedlot, producers grazing alfalfa should be prepared to adopt the concept of an acceptable level of death loss. Knowledge of the interactions between the animal, plant and environment factors that lead to bloat is the key to profitable grazing alfalfa with minimal death loss.

**For more information on preventing pasture bloat, contact your local Manitoba Agriculture, Food and Rural Initiative GO office or visit us on line at [manitoba.ca/agriculture/production](http://manitoba.ca/agriculture/production)**

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