PREVENTION OF

Pasture Bloat

Alfalfa is one of the most nutritious forages available and is widely used as hay or silage in beef and dairy rations. Nevertheless, grazing beef cattle on alfalfa remains limited due to the crop's well known risk of causing pasture bloat.

Alfalfa is a highly palatable, productive perennial legume and an excellent source of protein, energy, vitamins and minerals for beef cattle. Because of its strong nutritional value and agronomic benefits, alfalfa can play a major role in a sustainable beef production system. Incorporating alfalfa into pasture stands offers multiple advantages, including improved soil fertility through nitrogen fixation, greater plant biodiversity, increased forage yield and enhanced animal performance. Cattle grazing alfalfa commonly achieve 1.5 to 2 pounds or more of daily gain. Alfalfa also provides resilience during dry growing seasons due to its natural drought tolerance. By understanding key plant and animal factors, producers can develop effective grazing strategies that capture these benefits while managing the risk of bloat.

Signs of Bloat

- Distension on the left side of the animal
- Frequent urination and defecation
- Kicking at the belly, stomping and shifting weight repeatedly
- Labored breathing

The Basics of Bloat

Cattle are ruminants, meaning they have a four-chambered stomach designed for microbial fermentation. Digestion begins in the rumen, where bacteria and enzymes break down plant material. Alfalfa's high soluble protein content and rapid rumen degradability cause it to be digested five to ten times faster than most grasses. This rapid digestion reduces plant particle size quickly and increases the flow of digested material from the rumen into the lower digestive tract. The resulting high rate of rumen turnover allows cattle to consume more total forage, which is one reason they gain weight well on alfalfa. Unfortunately, this fast digestion also increases the risk of bloat.

During rumen fermentation, gases such as carbon dioxide and methane are produced. Under normal conditions, cattle release these gases by belching. However, when digestion proceeds very quickly—as is common when cattle consume lush alfalfa—stable froth or foam can develop in the rumen. This foam can block the cardia, the opening that allows gas to escape. When gas becomes trapped, it accumulates within the rumen, causing pressure to build in the abdomen. As pressure increases, it compresses the lungs and restricts the animal's ability to breathe. If this pressure is not relieved, the condition can progress to respiratory failure and death.

The risk of bloat is highest when alfalfa is in the vegetative to early-bloom stages of growth. At this time, the plant's cell structure and high soluble protein content make it extremely digestible. As the plant matures, cell walls thicken and soluble-protein levels decline, reducing the rate of rumen digestion. Once alfalfa reaches 15-20 per cent bloom, the risk of bloat drops substantially. By the full bloom to post bloom stages, rumen digestion of the plant slows even further and the likelihood of bloat is greatly reduced. In a two-year study at Kamloops, 129 cases of bloat occurred during the vegetative stage as compared to only 20 cases at bud stage with no incidences after the alfalfa was in bloom.

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 dried.

The belief that alfalfa becomes bloat safe after a frost is not accurate. While it's often assumed that a hard frost lowers soluble protein levels, freezing actually ruptures plant cell walls and can increase the release of soluble protein. Although the risk of bloat in frozen alfalfa does decline over time, it should be considered bloat reduced, not bloat safe. As a general guideline, alfalfa is typically safe to graze about two weeks after a strong killing frost.

Managing Alfalfa Grazing

Uniform, consistent forage intake is essential when managing cattle on alfalfa pastures. Effective alfalfa grazing management is a dynamic process that requires an understanding of the many factors that can influence how much alfalfa cattle consume from day to day.

Cattle should never be turned onto an alfalfa pasture until they have been fully fed. Offering a mix of good-quality alfalfa-grass hay beforehand can help fill the rumen and prevent over-consumption of fresh alfalfa when animals first enter the pasture. If rotational grazing is used, ensure that the initial paddock is not grazed so short that cattle are hungry when they are introduced into a fresh paddock.

Cattle that are new to grazing alfalfa will typically consume most of the other available forages in the pasture such as grasses and dandelions along with the alfalfa. This can create a false sense of security, as animals rarely bloat while these alternative forages are present and their intake is a mixed diet. However, once these other forages are grazed down and cattle begin consuming a higher proportion of alfalfa, the risk of bloat increases. This shift is often responsible for bloat outbreaks two to three days after animals are moved into a new pasture.

Once cattle have been introduced to alfalfa, the herd should remain on alfalfa pasture. It's common for animals to experience mild bloat during the initial introduction, but this can often be managed by keeping the animal walking until the gas dissipates. Removing cattle from the pasture and reintroducing them at a later date generally increases the risk of bloat, unless that first grazing attempt occurred during the bud or pre bud growth stage. Maintaining a high stocking density can also help by increasing competition and reducing the chance that any one animal selectively grazes only the lush upper portions of the plant, which are more likely to trigger bloat.

Environmental factors that interrupt normal grazing patterns such as storms, extreme heat, or biting flies can disrupt intake on alfalfa pastures and increase the risk of bloat. During these higher risk periods, animals should be monitored more frequently for bloat symptoms, as these conditions can trigger multiple cases or even "bloat storms." Cattle typically have three to four grazing bouts per day on alfalfa pastures, with major bouts occurring shortly after sunrise and again in the early evening. Bloat most often develops one to one and a half hours after a major grazing bout. Understanding the herd's grazing patterns allows producers to adjust their management and observe animals during the times of greatest risk.

Bloat Prevention Technologies

Several research supported technologies are available to help reduce the risk of bloat when grazing alfalfa. Co-seeding alfalfa with sainfoin or birdsfoot trefoil remains one of the most promising strategies. These legumes contain condensed tannins that naturally reduce foam formation in the rumen. Canadian researchers have recently developed sainfoin varieties with improved yield, regrowth and survival under competition with alfalfa. One of these new cultivars, AAC Mountain View, is now available to Canadian producers.

Bloat risk may also be reduced in pure alfalfa stands by selecting cultivars with reduced bloat potential. These varieties tend to have thicker cell walls and lower soluble protein levels, which slow initial digestion and help reduce the onset of bloat. AC Grazeland Br, developed by Agriculture and Agri-Food Canada, is an excellent example.

Bloat can be controlled, even in vegetative alfalfa, if it is cut and allowed to wilt for a period of 48 hours. If the alfalfa is in the bud or flowering stage, 24 hours of wilting should suffice. Having said this, consideration must be given to the moisture level and degree of drying that is able to occur over these periods of time. Wilting likely reduces bloat risk by lowering the plant's soluble protein content. This practice can be used within a rotational grazing system, though it is more labour-intensive and costly than direct grazing.

A number of feed and water additives can help lower bloat risk. Anti-foaming agents such as poloxalene may be provided two to five days before turnout and can be delivered as a top dress on feed, in grain mixtures, through drinking water, or in supplement blocks. Adding bloat preventing products like Alfasure™ directly to drinking water is often advantageous because it ensures more consistent intake than when mixed with minerals or molasses blocks. Ionophores such as monensin can also reduce bloat by altering rumen fermentation patterns and may be delivered through pelleted supplements, salt or mineral mixes, or controlled release boluses.

Additional Tips for Alfalfa Grazing

- Avoid morning moves—shift cattle between 2 – 5 p.m. when bloat risk is lowest.
- Be cautious two days after rain—moving cattle during rain is less risky than moving them later during hot weather, when rapidly growing alfalfa is at peak bloat risk.
- Provide a free choice fibre source such as a straw bale in the paddock.
- Avoid long term continuous grazing—after 2 – 3 weeks, alfalfa regrowth increases bloat risk.
- Monitor cattle closely to see what they are eating and whether they are mixing alfalfa with grass.
- Avoid high levels of Nitrogen fertilizer—this can increase the soluble protein content of the plant.
- Maintain escape pastures so the herd can be removed from alfalfa if grazing conditions become high risk.

Conclusion

Cattle producers and beef specialists agree that alfalfa is a forage that should be respected, not feared. Years of experience and research have shown the value of grazing cattle on pure or mixed stands of alfalfa. While bloat is always a possibility, following a few key production and management principles can greatly reduce the risk. From a beef-grazing standpoint, most current interest lies in pastures containing 30 to 60 per cent alfalfa, grown in blends with grass forages and/or other legume species. This practice alone significantly reduces the likelihood of bloat. However you choose to incorporate alfalfa into your grazing system, remember this: leaving alfalfa out is leaving money on the table.

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