

Pasture Bloat in Sheep

—Ulf Kintzel

I have written several articles about the many benefits of having white and red clover incorporated in sheep pasture. However, there are risks involved. Under certain circumstances, both clovers can cause pasture bloat, which can kill a sheep in a very short time. I want to address this risk in this article because I don't want to imply that clovers can be grazed indiscriminately. It takes some foresight.

Let's start with explaining what bloat means when pasturing sheep. Dairy people may very well be aware of it, but many others have various ideas of what it is, having heard of it happening in dogs, which is an entirely different issue. Pasture bloat in sheep (and other ruminants) is also called frothy bloat. A layer of frothy bubbles that develops when a lot of legumes with high protein content and little fiber are consumed prevents a sheep from releasing the gases by belching. That gas builds pressure inside the rumen and eventually starts pushing onto the diaphragm, which separates the chest from the abdomen. It restricts a sheep's ability to breathe. That restriction can be so severe that the sheep dies because it suffocates. When a sheep experiences severe bloat, its left-hand side, where the rumen is, will be enlarged to an extreme (like a balloon) and it will breathe heavily, often with its tongue out.

Suggested treatment addresses removing the gas from the rumen so the sheep can breathe again. The

methods range from massaging the rumen while having something like a bunch of rolled-up straw in its mouth to get it to burp, to pushing a piece of hose down the throat and into the rumen, or using a trocar. A trocar is a device consisting of a metal awl in a tube that gets pushed through the skin and into the rumen. When the awl is taken back out, the tube stays in the opening and releases the gas. All three methods have the same flaw. First, to treat the sheep, you must catch it. Catching and treating it stresses the sheep. Stressing the sheep increases the heart rate and thus the rate of breathing. Increased breathing when you can't breathe makes the sheep die quicker. Aside from that, time will be very limited to treat a sheep. If death arrives, it arrives quickly after the onset of bloat. Secondly, all these methods are limited in their success rate. They all don't necessarily release the gas to a point that the sheep survives. I have tried all three in the past with varying success. In those cases when I did succeed (the hose pushed down into the stomach is my preferred method), I was left to wonder if the bloat would indeed have caused death or if the sheep would have survived anyway.

Furthermore, there are various treatment medications available. They contain ingredients like docusate sodium, a laxative, or poloxalene. They are liquids that need to be administered orally with a drench gun or oral syringe. I have had one of these treatments on hand for many years but never used it. They are supposed to allow the little (frothy) gas bubbles to dissolve. Vegetable and

Photos by Author



Grazing pasture at a more mature stage provides more fiber and slows consumption, both helping to avoid bloat.

mineral oil are said to do the same. I cannot speak to the effectiveness of these treatment options. Here is the catch with them: to have a chance to use either of them effectively, you would have to have it on you, ready to be used in a drench gun. You would furthermore need to take the time to observe each time when you let your sheep into the next grazing cell, wait about 20 minutes to half an hour to observe, and then catch the bloated sheep if bloat occurs. Then you need to treat the sheep on time—your window of opportunity is short. To treat it, you must catch it—out in the open field and without causing much stress to all of the sheep or you will hasten a sheep's death or even cause it in others because of the stress you create. Perhaps that is possible with a handful of sheep. The larger the flock, the harder it gets.

Here is another nugget: whenever I feared bloat might happen and I stayed and observed, it didn't happen. It almost always happened when I least expected it. Other sheep farmers and shepherds, who are more experienced and who I spoke to, share that experience. For many inexperienced sheep farmers, the first time they take notice that some sheep had bloat is when they find them hours later or the next day dead in the pasture. Needless to say, no matter how effective a bloat treatment might be, it is now too late to try it out.

Bloat happens roughly in the first 20 minutes of grazing. If it hasn't happened after half an hour, it is not going to happen this time around because the sheep start getting full. The clock starts ticking all over if the sheep get hungry in between two grazing cycles. The hungrier the sheep are, the greater the chance of bloat.

Additional factors that increase the chance of bloat are wet or dewy pasture, wind, and sheep that are rushed and have a higher heart rate at that time. However, all of these are not factors that play much of a role when preventative measures are taken since they themselves are not the cause of bloat, only contributing factors. They do increase the risk of bloat when hungry sheep are let into a large grazing cell with young clovers.

Some sheep are more prone to bloat than others. If you have the same couple of sheep bloat when let into a new pasture but don't die, yet it keeps you from utilizing good legume-rich pasture the way you want, then it is time to think about culling this or these sheep. Furthermore, not all sheep die of bloat when deadly bloat occurs. Most times not many die, just a few. That is the upside. The downside is it is always the largest sheep that die. Why? Because they have much more rumen capacity for gases to develop and then get trapped. That

chance is much smaller when you have sheep of small and narrow frame.

Since treating bloat has a low success rate and time is an issue when bloat occurs—you have maybe 15 to 20 minutes to save a sheep from suffocating—prevention becomes the key factor in dealing with bloat.

One method that I have seen described is feeding them hay prior to letting them onto clover-rich pasture. However, I have experienced when my sheep were offered the most perfect alfalfa hay free choice when I had prime spring pasture available, they ate very little of it. Most sheep ate none at all. The feeder with hay was set up in the pasture. Since the sheep knew that better pasture was coming, they ignored the hay. One would have to force them to eat the hay, for instance by keeping them in the barn or barnyard before letting them out on pasture. If your pasture is right next to the barn, maybe

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this works. It doesn't work for me since many of my pastures are hundreds of yards away from the barn. In any case, no matter what you try, feeding hay while excellent pasture is available is costly because the flock would have to consume a significant amount of hay for this method to work. A mouthful of hay doesn't prevent bloat.

A common question I receive is about an adjustment period before grazing bloat-causing legumes. The assumption is bloat can be prevented when the sheep are used to the diet containing a high percentage of legumes. Some university papers I read even suggest that. Unfortunately, there is no such thing. Whenever you put sheep in a pasture that is rich of young clovers or alfalfa and give them lots of space to selectively eat a lot of young leaves, bloat is a real possibility no matter how many days or weeks the sheep have eaten it before. The hungrier the sheep are, the greater the chance of bloat.

Allowing the pasture to mature somewhat and letting the clovers grow taller and thus develop more fiber is a suggested prevention method in literature. That is true, at least to an extent. Taller pasture is richer in fiber. What's in my view an almost equally important part is the fact that the sheep cannot eat taller pasture of about six to ten inches high as fast as short pasture of just a few inches high. The faster a sheep eats, the higher the risk of bloat. For red clover, this method of grazing a more mature plant works reasonably well. However, white clover, no matter how tall, will never be truly fibrous. White clover has a different growing habit than red clover. It grows its leaves on top of the stem instead



Keeping the sheep full and thus avoiding empty rumens in which lots of gas can form reduces the chance of bloat manifold.

of leaf-bearing smaller stems branching off the main stem. Ladino and New Zealand grazing white clovers can indeed grow quite tall. Yet, the three leaves (four, if you are lucky) sit on top of its stem and are the ones that are grazed first. They are always going to be lush, no matter the age or the season. White clover is never a truly fibrous plant.

There are also minerals available containing poloxalene that are supposed to prevent bloat when fed prior to grazing pasture that could cause bloat. That's a tall order with grass-fed sheep or a flock that does not receive grain during grazing season to prevent bloat, because all of the sheep in the flock would have to eat these minerals prior to grazing the clovers. Furthermore, in researching these poloxalene-containing minerals, I had a hard time finding places that sell them. I don't know that this is indeed a viable option, but to make the list of suggested prevention options complete I feel obligated to mention this one as well.

For the same reason, to make the list complete, I want to address the aforementioned dew. Why? Because waiting until the dew is off is also a suggested method to prevent bloat that can be found in university papers. To the inexperienced reader it might read like bloat will not occur if one would only wait to graze a legume-rich pasture until the dew is off. That is not so. Dew is only

a contributing factor that may enhance the risk of bloat. It isn't the cause. I know I already touched on it in a previous paragraph but find it worth repeating since this notion is a dominant one in the university papers I have read.

So, what is my suggestion for preventing bloat after I shot down almost any other method or gave it only a marginal chance of success? My answer is a simple one: Keep your sheep full. Sheep that are full cannot develop bloat, simply because they cannot possibly consume enough gas-forming leaves in one setting to develop bloat.

To keep them full, one must first get them full. When the clovers develop in the spring and rotational grazing is in full swing, it becomes quickly apparent that bloat may occur after explosive growth of clovers sometime in late April or early May. When I do a pasture shift, I give the sheep a smaller cell first by subdividing that day's grazing cell. That forces them to eat more of the fibrous parts of all available plants, including the grass, which does not cause bloat. It prevents them from rushing across the pasture and selectively eating just the leaves of clovers. The moment they are full and stop grazing I open the section they grazed by removing the fence and thus allowing access to the whole grazing cell. (Please note that I stated to open up the smaller section


when the sheep stop grazing as opposed to waiting until the section is fully grazed!) Now the sheep have too much already in their rumens to bloat, no matter how selectively some eat. Trust me, some sheep are specialists in seeking out the plants that could cause bloat.

There are days when the daily routine is interrupted because other chores are on the schedule such as vaccinating, deworming, weighing lambs, separating out market lambs or breeding stock—the list goes on. All of them require that I take the flock off the pasture and run them through the chute. By the time I am done, the sheep are hungry. That is when I repeat my practice of first offering a smaller section of the day's grazing cell and offer the whole grazing cell when the sheep stop grazing the first smaller section.

Keeping them full would require a daily pasture shift. If you have a grazing cell set up that lasts your flock for example five days and you let your flock into the next grazing cell after five days that is large enough to also last you five days, then you cannot possibly have your flock full enough to avoid them eating too many legumes in too short of time. They will rush to seek them out. The same holds true for a pasture cell designed for two, three, or four days and beyond. To mitigate the problem, you can use the same method I described above by fencing off a smaller section and letting them graze that first until they stop eating before offering the whole grazing cell.

I have practiced this method of keeping sheep full for many years, even decades by now. It has served me well. Yet any method for anything in life is never one hundred percent successful. In the rare cases that bloat may still occur in an animal or two of mine, what do I do? Nothing! I stay calm and observe, counting down time. If the sheep hasn't died within half an hour, it is unlikely to die. Many decades ago, I caught these sheep and tried all the methods I learned and many of them

died anyway. I did this until an old shepherd told me that I am stressing those sheep by trying to catch them and then treat them. It gets their heart rate and thus the breathing up and kills them a little faster. It was his suggestion to just stay calm. It does take some nerve doing so, but the advice served me well. Just remember that this method of doing nothing does not stand by itself. It is in addition to the precaution that I always take prior to grazing my young clovers.

What if you don't want to do any of it and keep your weekly pasture rotation? The answer is simple: don't graze clover or any other legumes that can cause bloat. Personally, I find these clovers or other legumes in perennial pasture essential to be successful in doing grass-fed. Forage intake and weight gains are not the same without them. Yet it does take some management to avoid losses. 

Ulf owns and operates White Clover Sheep Farm and breeds and raises grass-fed White Dorper sheep without any grain feeding and offers breeding stock suitable for grazing. He is a native of Germany and lives in the US since 1995. He farms in the Finger Lakes area in upstate New York. His website address is www.whitecloversbeepfarm.com. He can be reached by e-mail at ulf@whitecloversbeepfarm.com or by phone during "calling hour" indicated on the answering machine at 585-554-3313.

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