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TECHNICAL BULLETIN No.31
***Bloat in sheep and goats: Causes,
prevention and treatment***



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FOREWORD

This technical bulletin titled “*Bloat in sheep and goats: Causes, prevention and treatment*” is the 31st in a series produced by the Ethiopia Sheep and Goat Productivity Improvement Program (ESGPIP). The ESGPIP is a USAID funded Project with the objective of improving the productivity of Ethiopian sheep and goats in Ethiopia.

Bloat is a condition that can be life threatening to sheep and goats. It can arise from different causes and can be prevented easily through proper management of animals.

Some background of the causes, recognition of the symptoms and possible methods of releasing the accumulated gas in the rumen that causes bloat are presented in this bulletin. The information contained in the bulletin is useful for development agents to train farmers/pastoralists and also for other users engaged in business ventures based on sheep and goat rearing.

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August 2009

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Bloat in sheep and goats: Causes, prevention and treatment

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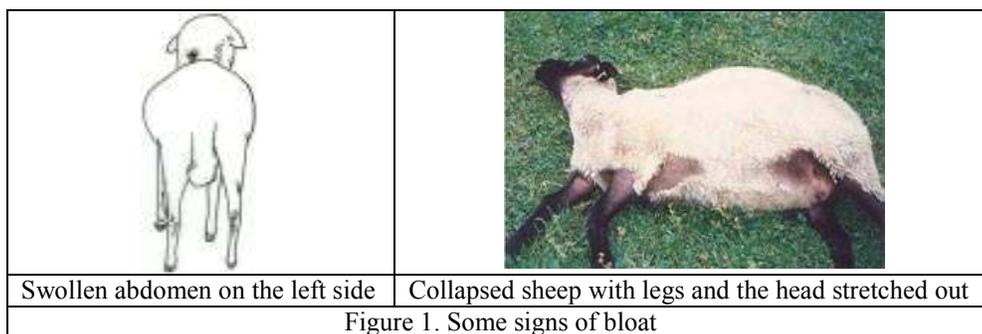
1. Introduction:

The stomach of ruminant animals produces gas as a natural by-product of digestive fermentation. The animals continually belch, about once every minute, to get rid of the gas. Whenever anything interferes with this release of gas or if fermentation is too rapid, gas becomes trapped in the rumen causing a condition known as bloat. Bloat can be a life-threatening condition if left untreated. Bloat can occur when an animal grazes lush young pastures containing legumes or grains, particularly if the pasture is wet. Sometimes ruminants kept by the household and fed only feed such as dry bread can also develop bloat. Bloat is caused by obstruction or blockage of the esophagus. A good example is animals eating plastic bags. Animals suffering bloat will in most cases recover if treated quickly and properly. Bloat is most common at the beginning of the rainy season when animals are exposed to fast growing lush pasture after being on a diet of dry feed. Many bloat conditions can be prevented by using proper nutrition and sound management.

2. Clinical Signs

A good producer of sheep and goats should recognize healthy rumination so that he/she is able to recognize signs of bloating. The following are signs of a bloating sheep/goat.

- The most common sign is a distended abdomen, mostly on the left side, behind the ribs, high in the flank area. This may later progress to an enlargement of the entire abdomen. The distended area becomes taut and sounds like a drum if tapped. This may happen suddenly, especially when the animal is grazing on wet pasture in the morning.
- The animal may show signs of pain such as grinding teeth, depression, getting up and down, extending its neck, frequent urination or defecation and even make grunting sounds.
- The pain from the distension causes the animal to try to kick its belly or it stands very stiff with its hind legs wide apart.
- In an advanced case, the animal may have difficulty in breathing, i.e. excessive panting and staggering about if moved. Finally, in severe bloat, the animal will go down due to the swollen rumen pressing on the diaphragm causing difficulty in breathing followed by death due to respiratory and heart failure (Figure 1).



3. Causative Agents

There are two major categories of bloat, frothy bloat and free-gas bloat.

3.1. **Frothy bloat** - This type of bloat can be brought about by overeating lush, damp feeds such as wet, green pasture with a high proportion of legumes cause excessive gas bubbles in the rumen. Foam forms in the rumen with tiny gas bubbles making it impossible for an animal to belch and rid themselves of gas. Green feed that has grown warm in a stack, poorly digestible feed material and sudden changes in feed can cause frothy bloat. Foamy or frothy bloat is more dangerous than dry bloat. The rumen expands with foam and the animal can die quickly from respiratory or circulatory failure due to excessive pressure on the diaphragm. Several animals are usually affected with this type of bloat.

3.2. **Dry or free-gas bloat:** usually caused by:

3.2.1. **Blockage of the esophagus (Choking):** Sometimes an animal may swallow something large enough to block the esophagus, preventing removal of gas by belching and resulting in bloat. This condition can also be caused when animals have eaten plastic bags (common in goats). The general symptoms of choking are profuse salivation, very rapid bloating, restlessness and gasping (difficulty in breathing). In most cases, swelling may be seen and felt at the neck region. Usually, only one animal gets this condition at any one time.

3.2.2. **Displacement of one of the "stomachs":** It is a fairly common problem in pregnant ewes/does. As the lambs begin to reach full size, and especially with twins or triplets, they occupy an increasing amount of space in the abdomen. The expanding uterus will push the digestive organs into places and positions which may restrict the release of gases. This is normally not a life-threatening condition (except in some instances **after** delivery); but it can lead to minor bloating. This type of bloat can easily be remedied by feeding small quantities of bulky roughage frequently (and a little more concentrate to provide essential nutrients) and encouraging plenty of moderate exercise, even during late gestation.

4. Preventing bloat

Prevention is the best medicine for bloat. Keep a watchful eye on your sheep/goats if they are at risk, and be prepared to deal with the symptoms. The following are some of the steps you should take:

- Avoid moving animals to wet pasture, especially first thing in the morning. Avoid frosted pasture. Wait until the sun has made the pasture drier.
- Do not give water to animals just before you put them on to wet pasture.
- If you have to graze your sheep/goats on young, wet pasture, fill them up with dry hay first and introduce the new pasture slowly for short periods (for an hour or two each day) and gradually increase the time. This is important to give the rumen time to adjust to the new, lush forage. Even then, keep a watch on animals at pasture for signs of bloat.
- Avoid rapid eating by hungry animals.
- When you change feed, do it slowly. If you feed grain (concentrates), start with a small amount each day and increase the amount gradually.
- Keep water and salt available at all times.

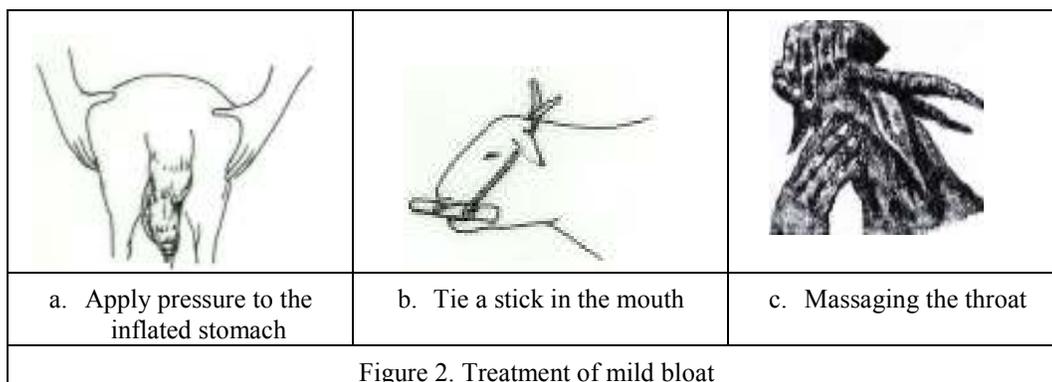
5. Treatment

Treatment of bloating sheep/goats consists of measures that will stop the formation of additional gas and assist in the removal of the gases already present. Keep on hand some remedies so that you can quickly react and hopefully save an animal should an emergency arise.

Mild bloat:

If there is just some slight expansion and the animal is still eating and moving about you have mild bloat and the following measures should suffice to remedy the situation.

- Sometimes bloat occurs because large pieces of feed block the esophagus. If this happens, try to massage the neck to remove the blockage;
- Making the animal belch is one way of treating bloat. You can do this by:
 - Keep the animal in standing position;
 - Mild agitation of ruminal contents. This can aid in the release of trapped gas bubbles (Figure 2a). Apply side- or lifting-pressure to the stomach to help expel the gas by lifting the animal from below the stomach. Sheep/goats can be sat on their butts, to rub their stomachs;
 - Tie a smooth stick in the mouth, crosswise. The animal will chew at the stick and stimulate saliva production that can assist in breaking up froth in the stomach (Figure 2b);



Intermediate bloat condition:

- If the condition does not improve, passing a small diameter rubber tube (0.5–1 cm opening) down the throat and into the stomach to release the gas is essential (see Appendix 7.2 for proper procedures of tubing an animal). Stomach tubing is an emergency procedure and a good option for treating dry bloat. The tube does nothing more than provide an unimpeded connection between the rumen and the outside world. In some cases, it may be necessary to move the tube and try to find the gas pocket. To make certain the tube is in the stomach, smell the gas released. It should smell like stomach contents. If it is a gas bloat, gas may be immediately expelled once the tube enters the stomach. If no gas comes out after this maneuver, the condition is probably frothy bloat that requires other measures.

- If the above attempts fail, then give a drench (drink). Drench the animal properly and accurately to avoid entry into the respiratory tract (See Appendix 7.3 for proper drenching methods). The drench can be given via a stomach tube. The drench used can be one of the following:
 - One large table spoon of washing detergent, e.g., Omo, Lux etc. mixed with about 60 cc of water will eliminate the froth and allow the goat to belch.
 - A solution of sodium bicarbonate (cooking or baking soda) and water can also help disperse the gas.
 - If it is frothy bloat, pouring 100–200 ml of vegetable oil (peanut, noug or linseed oil) through the stomach tube will help break up foam and help release gas. A narrow necked bottle can be used for administering the liquid;
 - Use commercial medicine if available. A product called *Therabloat* can be given orally or directly through injection into the rumen and is very effective in dissipating frothy bloat (3 cc mixed with about 30 cc water and shaken well).
 - If the methods work and the animal shows signs of improvement, then put it on dry, coarse hay to stimulate the rumen to contract.
 - **Caution:** *Sheep and goats with rabies can show signs similar to bloat. If rabies is known to be prevalent in an area, do not put your hands into a sick animal's mouth. Exposure to the saliva of a rabid animal can transmit rabies to humans.*

Severe bloat:

- In severe cases where routine treatment does not relieve the problem and the animal is swollen "tight as a drum," prostrate and near death, it may be necessary to puncture the rumen. A trocar and cannula can be stabbed into the rumen through the highest point of the inflated left flank, midway between the last rib and the hip, releasing the gas (see Appendix 7.4 for proper procedures of puncturing the rumen). In such emergency cases, time is important. The animal has only minutes to live once it goes down. It will, thus, be necessary to act quickly.
- In absence of a trocar and cannula, make use of long, large gauge vaccinating needle or a sharp pocket knife to puncture the rumen. Then insert a tube of hard plastic about 5mm diameter into the hole to help release gas. This will also help prevent leakage of rumen contents into the peritoneum that would cause infection (peritonitis). After the gas is released entirely, pull the tube out and clean the wound with iodine solution.
- Remember that puncturing the rumen is a technique used only in extreme cases and as a last resort. Many animals treated in this manner die as a result of infection.

6. WHAT CAN THE DEVELOPMENT AGENT DO?

The following is a partial list of what development agents should do to prevent and control bloat:

- Learn the signs and symptoms of bloat and be able to identify affected animals.
- Advise and train farmers/pastoralists on the prevention of bloat by:
 - feeding their sheep and goats dry fodder (hay or crop residues) before allowing them on pasture;
 - not overfeeding after a period of temporary starvation;
 - ensuring adequate water supply; and
 - provide salt supplementation.

- Train farmers/pastoralists on proper treatment methods for bloat.
- Identify any local traditional methods of bloat prevention and treatment and evaluate their effectiveness. These could be introduced in training along with other treatment methods.

7. Appendix

7.1. First aid in case of bloat as a result of obstruction

Sometimes bloat occurs because large pieces of feed block the esophagus. If this happens try to massage the neck to remove the blockage by doing the following:

- Locate the object from outside the neck.
- Make an attempt to remove the obstruction by moving it gently upward into the mouth.
- Fix a gag between the teeth to discover the obstruction and try to remove it by passing your hand along the roof of the mouth and back into the throat.
- Should that fail, attempt what is known as the “*Heimlich maneuver.*” Place the sheep/goat in the same position just as you would stand behind a person, clasp your arms around the belly just below the rib cage and squeeze sharply. This may help expel the object or raise it far enough up the neck where it can be removed.
- If unsuccessful, pass a stomach tube well-lubricated with oil to gently push the object down into the stomach.
- If one of these procedures proves successful, then you can move on to dealing with the bloat.
- If unsuccessful, contact a qualified veterinarian.

7.2. Stomach tubing

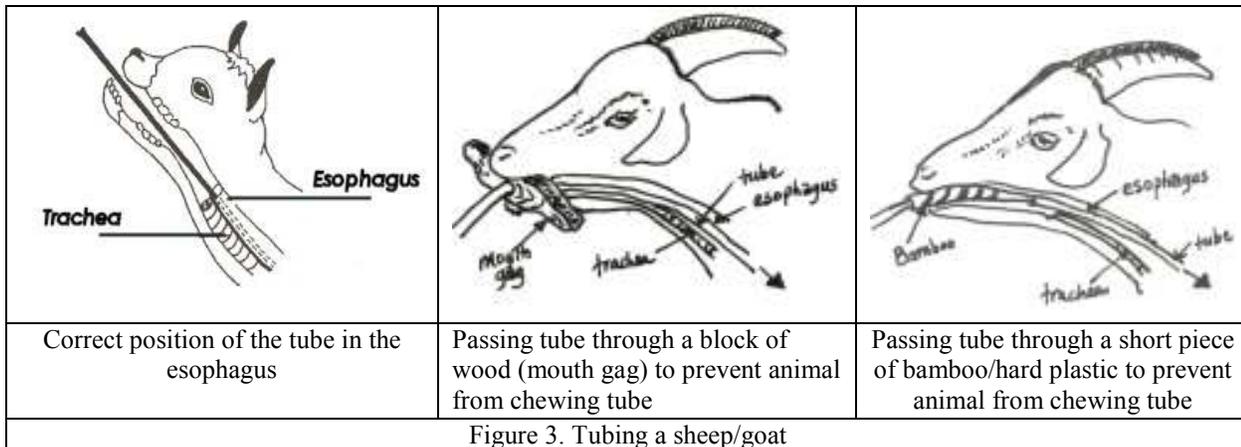
A stomach tube can be used to release trapped gases from the rumen. The same procedure can be used to give large quantities of medicine or other liquid substances directly into the stomach. There are different varieties of stomach tubes for animals of different sizes. You will need to practice this technique as there is a risk of the tube passing down the windpipe into the lungs and causing death of the animal.

The tube must be long enough to reach from the mouth to the distended flank, with some room to spare. Prior to inserting the tube into the animal’s mouth, measure the length of tube needed to reach from the mouth to the last rib and mark the length on the tube using a permanent marker. The tube should be soft, with an inner diameter of 0.5–1.0 cm depending on the size of the animal. The end of the tube should be lubricated using edible oil and there must be no sharp edges on the tube as this will injure the esophagus.

In order to prevent the animal biting and severing the stomach tube, place a speculum made from a piece of wood with a hole in it, a piece of hard plastic pipe, a hollow piece of bamboo or other similar device in the animal’s mouth (Figure 3). Insert the plastic tube through the speculum and slowly push towards the back of the throat. The animal will usually swallow it voluntarily. Then, gently push the tube down the esophagus. The tube should be seen and felt going down the neck. If it is neither seen nor felt, check the position to make sure the tube has not entered the trachea and traveled to the lungs. Watch the animal carefully for signs of coughing. If the animal coughs, the tube is in the lungs and you must take it out immediately. If a foreign body is lodged in the esophagus, the tube will usually push it into the rumen. Most foreign bodies lodge at the base of the neck, so you will have to push it from there all the way into the stomach. When you reach the stomach opening, resistance on the tube is reduced and a large volume of gas will rush out. If not, don't despair, simply move the tube back and forth and around until you find the gas pocket. In frothy bloat there will not be much gas released. Medications like liquid

detergent, polaxalene (Therobloat) or vegetable or mineral oil are placed into the rumen to reduce the frothiness.

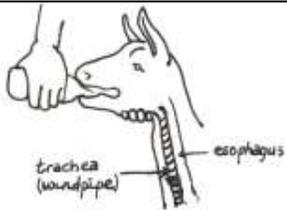
Once the gas is removed, pinch the tube and remove it in one smooth, complete motion to avoid contents of the tube entering the trachea. It helps to have two people to restrain the animal and keep the speculum in the mouth.

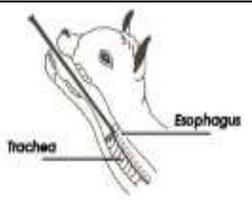


7.3. How to drench an animal

Liquids can be given to sheep and goats as a drench. Drenching can be done with a dosing syringe without the needle, a plastic tube as shown in Figure 3 above, or a Fanta, Coke or any other bottle with a long neck. Follow these procedures to drench sheep/goats safely:

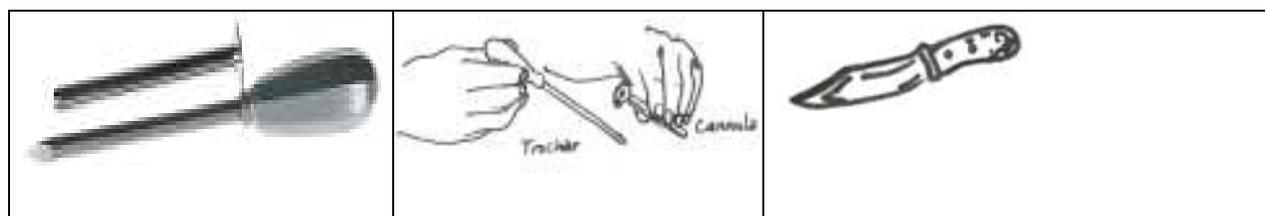
- Measure the correct amount of drench.
- Restrain the animal and open its mouth wide enough to allow you to insert the neck of the bottle. Be very careful not to get your fingers between the grinding teeth. You will be bitten if you do.
- Place end of the syringe or neck of the drenching bottle over the back of the tongue.
- Keep the sheep/goat's head raised. Raising the head too high (such that the nose is above the eyes) will prevent the animal from swallowing.
- Pour the liquid slowly over the rear of the tongue allowing the goat to swallow. Do not go too fast or the liquid could go into the lungs, causing pneumonia.
- Do not hold the mouth open while dosing.
- Do not hold the animal's tongue. It can't swallow if you do so.
- Make sure the goat is swallowing the contents and not choking.
- If the animal jumps forward, move with it to prevent damaging the roof of its mouth. Do not lift the animal off the ground!!

			
Slide a short hose over bottleneck to use as a drench bottle	Using bottle with plastic hose or long necked bottle to drench	Dose syringe for drenching liquid	Drenching an animal using a syringe without the needle
Figure 4a. Different options of drenching sheep/goats			

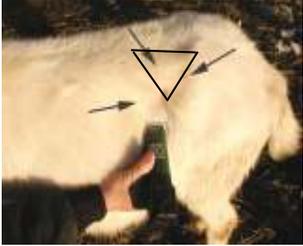
	
Drenching using a stomach tube	Drenching an animal using a drenching gun
Figure 4b. Different options of drenching sheep/goats	

7.4. Use of a trocar and cannula, needle, or knife to remove excess gas

If all other attempts fail, and as a last resort, a small tube can be inserted into the stomach through the side of the animal. An instrument known as a trocar and cannula is used for puncturing the rumen to release gas (Figure 5.) The trocar, having a sharp, triangular tip for puncturing the skin and rumen, is fitted into a hollow cannula. The cannula provides an opening through which the gas can escape. Grasp the trocar and cannula firmly, aim for the highest spot on the left side and plunge the instrument into the rumen. Withdraw the trocar, leaving the tube (cannula) in place. Gas will escape rapidly. After the gas is released entirely, pull the tube out and clean the wound with iodine solution. The diameter of the tube on a regular trocar is too narrow to allow frothy bloat to escape fast enough. You can use the opening to insert antifoaming agents.



Trocar (lower piece) and cannula (hollow upper piece)	Fitting the trocar into the cannula	A pocket knife can be used in an emergency in the absence of a trocar and cannula
Figure 5. Alternative instruments for puncturing the rumen		

		
Location of puncturing the rumen using a trocar and cannula, vaccination syringe or a pocket knife	Cleanse the area with a disinfectant (alcohol or iodine) if available	Punch area where the largest bulge of the rumen can be seen
Figure 6. Locating the point of puncturing the rumen		