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Sheep Council Update

Artificial lamb rearing - Managing abomasal bloat

MEAT & WOOL

NEW ZEALAND

Abomasal bloat can occur when lambs are fed cow's milk or milk replacer. This document covers a novel Norwegian technique adapted by Waikato farmer Claire Bull, to reduce the chance of bloat in artificially reared lambs. The technique involves adding yoghurt to the milk and was tested and modified by Sheep Council member and veterinarian Jenny Burton.

What is abomasal bloat?

The major cause of abomasal bloat is believed to be bacteria called *sarcina ventriculi*. However, clostridial species such as *Cl. sordellii* and *Cl. fallax* can also cause bloat. Warm milk entering the abomasum provide these bacteria with an ideal substrate (lactose) for fermentation.

Excess gas is produced which results in the abomasum expanding like a balloon. The wall of the abomasum can rupture causing death or adjacent organs can be crushed, leading to death.

Farmer finds a solution

After suffering losses in lambs being fed milk replacer, Waikato farmer Claire Bull searched for a solution to bloat problems.

A web-search initiated discussions with Dr Synnove Vatn of the Norwegian School of Veterinary Science and with Ingebreth Sandhu, a Norwegian farmer. They suggested *sarcina* bacteria were responsible for abomasal bloat and that administering yoghurt-based milk replacer could reduce the chance of bloat.



Jenny Burton, a veterinarian who farms near Cambridge, has verified the success of the method and modified the process. The Northern North Island Sheep Council have been instrumental in passing on results to farmers.

How the novel yoghurt treatment method works

Key points:

- Probiotics prevents pathogens multiplying by providing competition to bad bacteria.
- Prebiotics stimulate 'good bacteria'

Yoghurt contains more probiotics (*lactobacilli*-sp.) than milk. These 'good bacteria' provide a stable microenvironment that prevents pathogens from colonising and multiplying in the gut. They also improve immune function and can reduce scouring.

Yoghurt also contains prebiotics, which stimulate the growth of 'good' bacteria. Prebiotics are non-digestible food substances (usually carbohydrate plant products) that are fermented by micro-organisms in the gut.

Summary of the treatment process

- Add yoghurt to milk and heat (to ferment) to produce a novel milk mixture. Dilute with cold water.
- Feed this 'soured milk' mixture instead of normal milk (i.e. every milk feed).
- Feed the mixture cold, as warm milk with yoghurt will not effectively prevent abomasal bloat. Cold milk/milk replacer is commonly used in USA.
- Introduce mixture to lambs from five days of age but it can be given to lambs from two days old.
- Have a gradual transition from feeding warm to cold milk.

- Effective under either ad lib or set feeding regimes (i.e. once/day).
- Doesn't add a lot of extra expense.

Ideal early feeding strategy for artificially reared lambs

- Day 1 and 2 feed warm ewe or cow colostrum. Colostrum should be collected from the ewe or cow within 48 hours of her having given birth. The lamb should get up to five feeds (about 600ml for a 4kg lamb totalling 15% lamb body weight).
- On days 3 to 5 feed warm milk replacer as per usual.
- Introduce milk/yoghurt mixture on days 5 to 7, with a gradual transition from warm to cold feeding.

The Yoghurt Recipe for small numbers of lambs (i.e. under 20)

- Put three litres of warm water (40°C) in a nine litre bucket.
- Add 1kg of calf milk powder. Mix with an electric stick blender (250 watts or more).
- Add 200mls of acidophilus yoghurt. Mix. Cover with a lid or sheets of newspaper.
- Keep mixture warm for the next few hours. The easiest method is placing the bucket on a brewer's mat (cost \$50 for a 25-watt solid heating mat). If the air temperature is too cold the milk will take a long time to ferment. Another option is to put the bucket in an insulated box e.g. a polystyrene box with a lid. A hottie is a cheap source of heat in the box.
- The yoghurt should set within 8 - 12 hours and may have a soft crust on top with some liquid at the bottom or it may resemble thick commercial yoghurt.
- Remove 200ml of the liquid yoghurt for use as the starter for the next batch.
- Top up with cold water to the 8-litre mark on the bucket and mix to feed directly to lambs.

The Yoghurt Recipe for large numbers

- Add 250mls of acidophilus yoghurt to two litres of warm calf milk replacer at 40°C. Keep warm for 8 - 12 hours to set then leave a further 12 hours.
- Put 30 litres of warm water (40°C) in a 75 litre plastic bin. Add 10kgs of milk replacer and two litres of starter (acidophilus yoghurt).
- Mix until smooth. A powerful electric stick blender or submersible pump is useful. Another option is an electric drill with a mixer attachment.
- Put a lid or sheets of newspaper on the bin and supply warmth until set (24 hours). If possible, stand for a further 24 hours. A brewer's mat that gives off a low heat can be used under the bin for 12 to 24 hours. The bin could have an insulating blanket around it. Setting of the yoghurt is also dependent on room temperature. The set mixture may have a thick cheesy crust. At the bottom there may be some liquid.
- Remove two litres of liquid yoghurt to use as a starter for the next batch.
- Add water to give a total of 80 litres. Mix/sieve to remove any lumps.
- This soured milk will last up to five days in a cool place.
- Clean bucket between batches.
- A large bin of yoghurt is heavy to move. Devise a method to handle large quantities, e.g. submersible pump.
- The lambateria (feeder) should be kept in a cool place or the shade.

Success stories

Claire Bull reduced the incidence of abomasal bloat and scours to zero by feeding the mixture. Lamb deaths during artificial rearing were reduced from 25% to 3%. The Bull's rear 100 lambs per season and give lambs meal, hay and water as well as the milk mixture.

Another farmer eliminated abomasal bloat on either a twice a day or once a day feeding regime.

More Information & Acknowledgements

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