

CALCIUM AND MAGNESIUM DEFICIENCIES IN PREGNANT AND LACTATING EWES

AWI-funded research, conducted by the Graham Centre for Agricultural Innovation at Charles Sturt University, has shown that supplementing the calcium and magnesium intakes of pregnant ewes induced a better metabolic state, improved the immune response in twin newborn lambs and increased their weights at four weeks of age. Although mineral supplementation alone may not result in significant increases in lamb survival in individual flocks when ewes are grazing common pastures, it is recommended as a low-cost risk management strategy for pregnant ewes (especially twin bearers) to improve lamb survival.

HOW DO CALCIUM AND MAGNESIUM DEFICIENCIES REDUCE LAMB SURVIVAL?

Clinical calcium deficiency (hypocalcaemia or milk fever) can result in ewe deaths either during the last six weeks of pregnancy or during the first month after lambing. Symptoms include muscle tremors, being unable to rise and subsequent death.

Clinical magnesium deficiency (hypomagnesaemia or grass tetany) can result in ewe deaths, typically when ewes are grazing grass-dominant pastures or cereal crops in winter and early spring. Symptoms include staggering, incoordination and sudden death.

Hypocalcaemia and hypomagnesaemia can cause ewe mortalities, and lambs from affected ewes will usually die. Lambing difficulty and complications from birth may also be increased, reducing survival.

Minor deficiencies of calcium and magnesium, where the ewe appears healthy, were not shown to reduce lamb survival in trials. However, even when mineral levels in the diet are at levels currently recommended as 'adequate', increasing dietary calcium and magnesium improved the immunity levels in twin born lambs, increasing the chances of survival, and increased their weight gains to four

weeks of age, likely leading to improved survival of weaners and the potential for earlier turn off. Supplements also improved energy regulation in ewes, likely reducing the risk of metabolic disease such as pregnancy toxaemia (twin-lamb disease).



WHEN ARE EWES MOST AT RISK OF CALCIUM AND MAGNESIUM DEFICIENCIES?

Ewes bearing twins or multiple lambs have higher requirements and so will be more at risk. Older ewes are also more at risk. Stressful events close to lambing (movement, handling, yarding, especially if feed has been limited or during cold snaps) can also increase the risk.

The diet of the sheep is an important risk factor. Cereal crops or grass-dominant pastures (low legume/clover content), especially during winter and early spring, have low levels of calcium and magnesium, increasing the risk. Additionally, if potassium-based fertilisers have been used or cereal grains are fed in significant amounts, the risk of deficiency is heightened.

Even when pastures were adequate in calcium and magnesium, sampled flocks showed that 20% of twin-bearing ewes were still deficient. While ewes appeared healthy, these deficiencies indicate that many ewes are still at risk.



RECOMMENDATIONS TO REDUCE THE RISK TO EWE AND LAMB SURVIVAL

Prevention is affordable and accessible. A loose mix of lime/causmag/salt in a ratio of 1:1:1 fed daily at 20g per ewe costs around 2c/ewe/day. No benefit was observed from feeding ewe's low dietary cation-anion difference (DCAD, or anionic salts) supplements as a replacement.

Recommendations for distribution of supplements:

- **Grain supplement ratio:** Add the loose mix at 3% of total supplemental feed, or even higher if feeding lower levels of grain and ewes are grazing pastures likely to be low in calcium and magnesium.
- **Ewes grazing cereal or grass-based pastures in late pregnancy and during lactation:** While pastures containing a significant (20% or more) legume component theoretically provide enough calcium and magnesium, consider using the loose lick as an insurance measure, given deficient ewes were found grazing pastures with significant legume content.
- **Feeding in troughs as a loose lick:** Initially offer at a level to provide 30g/hd/day and adjust based on consumption. Top up as necessary – this will depend on the size of the feed trough and consumption rate. In wet weather the loose lick will become less palatable, so consider feeding smaller amounts more frequently in these conditions.
- **Use grain to encourage feeding:** Sheep will normally consume the supplement readily because the salt attracts them, however the ewes may need encouragement if pasture conditions are good. Feeding a small amount of grain in the feed troughs initially may assist in encouraging sheep to the troughs.

Source: Managing metabolic disorders in pregnant ewes to improve ewe and lamb survival.

Available at: <https://www.wool.com/on-farm-research-and-development/sheep-health-welfare-and-productivity/lamb-survival/>
Michael Friend et al, Managing metabolic disorders in pregnant ewes to improve ewe and lamb survival, September 2018, pp 4-91