

HYPOCALCAEMIA IN LACTATING DROUGHT FED EWES SUPPLEMENTED WITH RECOMMENDED LEVELS OF CALCIUM

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The cause of disease and mortality in pregnant and/or lactating ewes was investigated on 13 properties in 2005. On 6 farms pregnancy toxaemia, lactic acidosis, dystocia and hypocalcaemia associated with inadequate calcium feeding were diagnosed. However, on the remaining 7 properties hypocalcaemia was diagnosed in ewes which were well fed, well managed and were supplemented with calcium at recommended rates.

The aim of this paper is to report these findings which may have been peculiar to the circumstances in the district in 2005 or may be more widespread and frequent.

The properties on which these investigations occurred were commercial cropping and livestock farms within the Condobolin RLPB which is on the central western plains of N.S.W. While 2005 started as the fourth consecutive year of drought for the region, spring rains were above average. Ewe flocks were therefore entirely supplementary fed until at least August 2005. The disease investigation consisted of obtaining a history of the flock including the current and previous feeding regimes, a clinical examination and blood sampling of affected ewes, post-mortem of dead ewes and an inspection of the flock and its feeding methods. Blood samples were submitted to the Regional Veterinary Laboratory in Orange for testing for calcium and other blood parameters. Calcium levels were determined in the aqueous humour of dead ewes. In 2 cases, feed samples were submitted for laboratory analysis.

The properties on which hypocalcaemia occurred, despite calcium supplementation, shared a number of features. All cases occurred in May-June 2005 and in Merino ewes. This is more likely to reflect the normal population and time of lambing than a specific susceptibility. Affected ewes were mostly mature to old and were often twin-bearing. Most cases occurred in mid-lactation. Without exception ewes were well fed from self-feeders on rations of 8-11 kg/hd.week of grain and 2 kg/hd.week of oaten hay. Fine ground limestone was added to the grain ration at 1 to 1.5% in most cases although in 1 case the lime was mixed with salt and made available in a trough *ad libitum*.

Between 2 and 7% of the mobs of ewes were clinically affected with hypocalcaemia. Affected ewes collapsed into sternal recumbency but were usually bright, alert and responsive. Occasional ewes were dull but none showed tremours. A common feature was a profuse nasal discharge and profuse salivation. While the mortality rate was high in untreated ewes, most treated with subcutaneous calcium borogluconate recovered. The diagnosis of hypocalcaemia was confirmed by blood test in live animals and by testing the aqueous humour in dead animals. Of the clinically affected ewes tested, most had calcium levels of 0.65 to 0.94 mmol/L (normal values are 2.12 to 2.87 mmol/L). In 2 cases the grain mix was analysed. Calcium was tested at 4.1 g/kg and 2.4 g/kg. The laboratory which conducted the feed analysis (RLS Benalla) commented that the normal dietary requirement of calcium is 1.5 to 2.6 g/kg. Underwood and Suttle (1999) commented that "it would be surprising if performance suffered on any diet providing an average of 3 g Ca per kg DM throughout the year."

The question to be resolved is whether the hypocalcaemia observed was due to dietary deficiency, failure of absorption or failure of homeostasis. In an unpublished trial, pregnant ewes fed a grain diet supplemented with 3% limestone suffered from hypocalcaemia whereas unsupplemented ewes did not (Chris Bourke, pers. comm.) On 1 of the properties investigated, hypocalcaemia seemed to be exacerbated by lime supplementation and abated when lime feeding ceased. While this was a field investigation not a controlled study, it is likely that most farmers do not supplement with calcium as conscientiously as those that were affected here and yet on only 1 property was hypocalcaemia associated with failure to supplement calcium.

On the basis of these observations it seems that failure of homeostasis is the most likely explanation. If these findings are not unusual, it may be necessary to further investigate grain supplementation of ewes and in some instances reconsider our recommendations on calcium supplementation of grain fed, pregnant and lactating ewes.

Underwood, E.J. and Suttle, N.F. (1999). "The Mineral Nutrition of Livestock" 3rd Edition (CABI Publishing, Oxon, New York).

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