Grass tetany: prevention based on soil and plant analysis

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Introduction

Grass tetany is recognised as the major cause of deaths and lost productivity in adult beef cows on farms in southern Australia (Elliott, 2000). A survey was conducted on 25 farms known to have suffered cattle deaths due to grass tetany in southeast South Australia in 2002. The purpose of the survey was to determine the conditions that caused these cattle deaths and to establish a strategy to minimise future losses due to this disease.

Method

Each survey participant was selected based on recent cow mortalities due to grass tetany and visited in July / August 2002. Details collected related to cattle deaths, husbandry, grazing management, and samples of pasture and soil from the affected paddock(s). The diagnosis of death due to grass tetany was based on the clinical description and history provided by the stockowner at each visit.

Results and discussion

The survey revealed 205 cow deaths on the 25 farms with a median death rate of 2% (range: 1% to 29%). The average cow age at death was 8 years (2 to 14), and most cows were in condition score 2.5 to 3 and an average of 12 weeks (0.5 to 24) into lactation. Herd size ranged from 20 to 2,000 breeding cows, and individual losses due to grass tetany ranged from 3 to 25 cows across the herds. Feed on offer estimated at the time of the survey averaged 1,600 kg DM/ha (1,100 to 2,500) across the farms, compared to an ideal of at least 1,500 kg for a lactating cow (Prograze, 2003).

Soil and pasture samples were taken from 32 paddocks where deaths due to grass tetany were experienced. Soil types varied from predominantly siliceous sand to solodised solonetz (sandy loam over clay) to rendzina (heavy black clay over limestone). The distribution of losses over a range of soil types contrasted to the findings of Lewis and Sparrow (1991), who concluded that the greatest losses occurred on the solodised solonetz soils. A soil analysis to examine the cation balance indicated that 63% of samples were low in magnesium, 91% were low in calcium, and 25% were high in potassium. Pasture analysis revealed only 6% samples to be below the 0.2% magnesium desired minimum for grazing cattle, 78% were below the 0.7% calcium minimum, and all 32 samples were well above the 1.2% potassium maximum for grazing livestock. These survey findings support the causal association stated by Caple (1992). Essentially, the low dietary magnesium associated with deaths due to grass tetany is recognised as being due to low feed and fibre intake; imbalances of calcium, magnesium, and potassium in soil and plant; or suppression of magnesium uptake by low sodium, low phosphorus, or high nitrogen.

The consistent finding of high pasture potassium and low pasture calcium plus low soil calcium and magnesium indicates an opportunity to markedly reduce the incidence of grass tetany by applying dolomite to the soil. The rate of application will depend on the individual soil, but dolomite would have been beneficial in all but four of the soils examined. This is in addition to the various traditional preventative strategies (Caple, 1992) and would greatly enhance the availability and uptake of magnesium in lactating cows.

References

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