Grass tetany - property risk diagnosis.

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Introduction

Over the last 60 years, grass tetany has been recognised as a significant cause of mortality in sheep and cattle. In NSW economic losses to the State vary between $A5 to $A10 million annually through cow deaths. The severity of losses varies from year to year, but it appears that losses are so common that producers consider them a normal annual condition and often do not report them (Elliott 2001).

Losses from grass tetany in other states can be as high as $10-13 million in Victoria (Rutherglen Research Station Estimate 2002) and $3-5 million in South Australia (SARDI Estimate 2002). Losses do occur in Western Australia and Tasmania but have not been quantified. Nationally this represents a $20 million loss of cows per year.

Materials and Methods

Cooperating properties in southern NSW and north east Victoria measured air and soil temperature on a daily basis from May to August of 2002. Temperatures were collated and matched to animal losses and soil tests. Animal losses were compared with losses on properties where no monitoring was carried out.

Prediction of grass tetany susceptibility periods was made based on the critical temperature periods from previous research (Elliott 2001). Soil samples were received from 12 sites and compared to sites where cattle deaths had been recorded on matching non alerted properties.

Results and discussion

Two alert periods were identified and alerts were sent to properties to take remedial action to prevent grass tetany deaths.

Losses of animals were recorded in the Tumbarumba district due to grass tetany. On these properties soil tests showed a high ratio of potassium (K) to magnesium (Mg) plus Calcium (Ca) (K:Mg+Ca). Analysis of the results showed that grass tetany deaths were closely correlated to soil type combined with a temperature variation predicted to trigger grass tetany outbreaks (Figure 1).

The rapid rise of pasture potassium levels occur when air temperatures of 8°C (night) and 16°C (day) last for 4 to 6 consecutive days on soils where temperatures of 6°C to 7°C have been sustained for at least a week. Under these conditions plant roots (grasses and

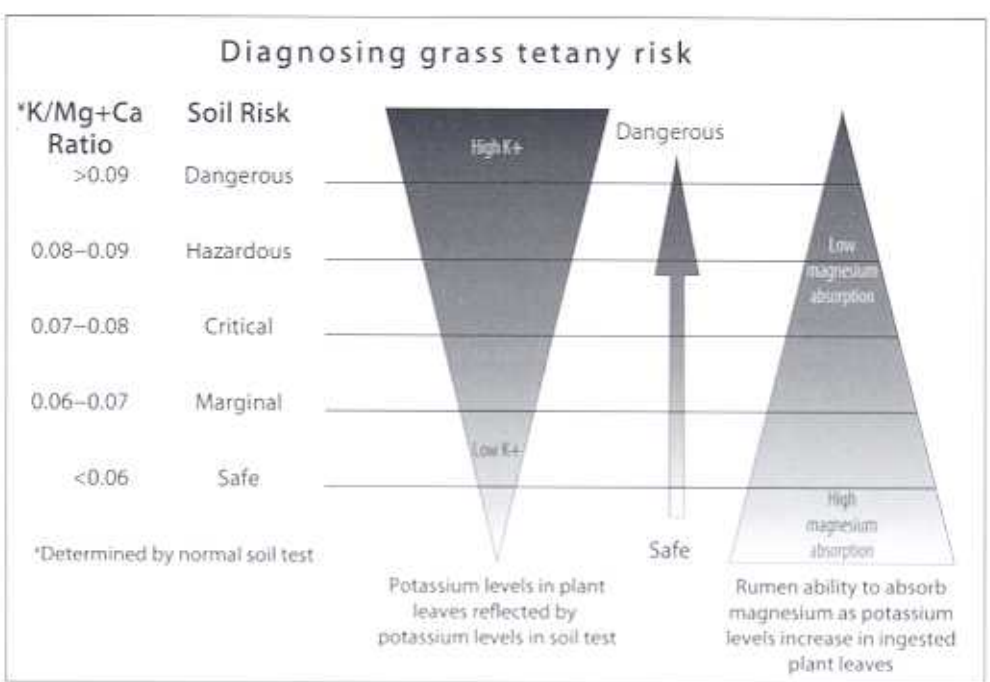

Figure 1 The effect of soil potassium to magnesium plus calcium ratio on the risk of developing grass tetany.

cereals) change from passively absorbing to actively absorbing K. As a result, high levels of K become available in the leaves of plants. The same process occurs in legumes, but the K:Mg+Ca does not rise as dramatically because the legumes have naturally high levels of Ca and Mg.

Cattle under stress from lactation loss of Mg in milk, mustering or first oestrous during cold weather immediately after warm weather need critical amounts of Mg to sustain normal physiological functions. When cattle ingest plants containing high levels of K, this reduces Mg absorption in the rumen, leading to an acute Mg deficiency.

Conclusion

Identifying the relative proportions of potassium compared to calcium and magnesium in the plant root zone, can provide a critical indicator to beef producers of the risk of grass tetany on their farm. Soil diagnosis of potential problem areas, is easy for producers to carry out as all the information required is available as part of a standard soil test.

References

Elliott, M. (2001). Grass Tetany in New South Wales. Masters Thesis, University of Western Sydney, NSW, Australia.

Elliott, M. (2006). Grass Tetany –MLA PIRD - Technical Report.