



## MINERAL RATIOS AND GRASS TETANY

*Dairy and beef cattle are prone to metabolic disorders such as 'grass tetany' at certain times of the year. Various mineral imbalances have been implicated as contributing factors.*

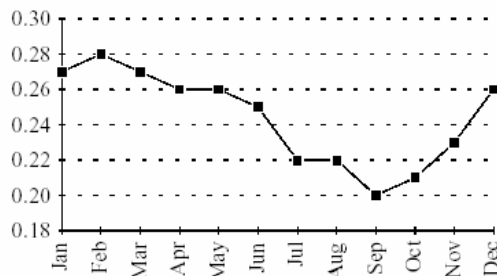
Hypomagnesaemic tetany, (sometimes known as 'grass staggers'), occurs when ruminant animals have abnormally low levels of magnesium in their blood.

There are many theories about the causes of these low magnesium blood-levels: some focus on the age, genetic makeup, and metabolic requirements of the animal; and others focus on the chemical composition of pastures. A variety of animal stress factors (such as pregnancy, lactation, the weather) have also been studied.

### Magnesium Concentrations in pasture

The concentration of magnesium in pasture follows a clear seasonal pattern reaching a maximum in summer and a minimum in winter. Data from pasture samples processed through Hill Laboratories illustrates this seasonal pattern.

Mean Values: Magnesium in Pastures



Research suggests that a magnesium concentration in pasture of 0.20% is a minimum requirement.

### The 'grass tetany' ratio

Grass tetany can occur even when pasture magnesium concentrations are in excess of 0.20%. The ratio\* of potassium to calcium and magnesium has been found to be a better indicator of grass tetany than magnesium concentrations alone.

$$* \frac{(K/39)}{((Ca/20) + (Mg/12.15))} \text{ i.e. } \frac{K}{Ca + Mg} \text{ expressed in milliequivalents}$$

This ratio also follows a seasonal pattern, peaking in mid-winter and reaching a minimum in summer.

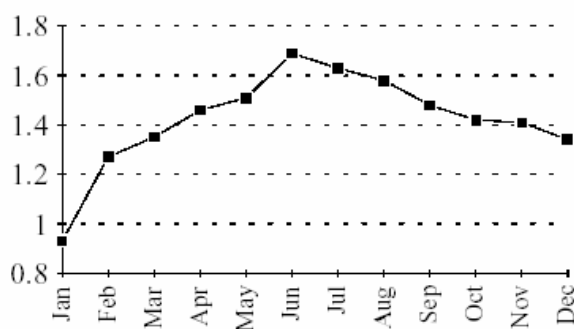
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### Mean Values: Grass Tetany Ratio



*It has been suggested that the 'critical' value for the 'Grass Tetany Ratio' is 2.2, with a sharp rise in grass tetany incidence being reported for pastures with a ratio **higher** than 2.2*

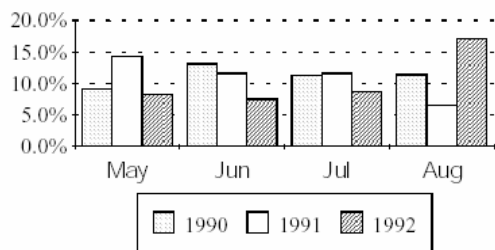
### Grass Tetany ration in winter 1992

Grass tetany can be more of a problem in some years than others. For example, some farmers experienced a higher incidence of grass tetany in the spring of 1992.

Analysis of samples processed by Hill Laboratories for the winter of 1992, compared to the two previous winters, shows that the proportion of pastures in which the Grass Tetany Ratio exceeded the 'critical' value of 2.2 **increased sharply** in August 1992, to 17%.

In contrast, the proportion during May to July 1992 was about 8%, much lower—and therefore more favourable—than the two previous years.

**% Pastures with Grass Staggers  
Index > 2.2**



The higher incidence of grass tetany reported in August 1992 could well have been caused by a rapid decline in pasture quality due to the adverse climatic conditions with this decline reflected in the graph above.

### Contact Details

For further information about any of the above tests please contact our client service managers.

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