Changes in the Mg and K/(Ca + Mg) values of forage grown under reduced radiation levels, compared to full sunlight, should favor a reduction in tetany cases. However, changes in other factors such as K, N, TWSC, organic acids, higher fatty acids, and dry matter content would likely result in reduced intake of dry matter and Mg or in reduced availability of Mg to the ruminant.

Reduced solar radiation may be a factor in the etiology of grass tetany. The incidence of grass tetany in Idaho, Nevada, and Utah appears to be greater if radiation levels are low in April. For example, daily radiation values during April averaged 437, 547, and 551 langleys per day during 1967, 1968, and 1969, respectively. The incidence of grass tetany for those respective years was severe, light, and near zero in the three-state area.

The reduced radiation in the three-state area coincides with the spring rainy period. Thus, more clouds result in less total radiation, but also in a greater opportunity for rain. In fact, for the 1967 to 1971 period, the correlation of April precipitation with average monthly radiation was $r = -0.97$. Therefore, while there is a good relationship between shading or reduced radiation and the incidence of tetany, it might also be argued that the causative factor is improved plant growth resulting from improved moisture conditions and not the reduced radiation per se. Final proof must await carefully conducted growth chamber experiments where radiation levels are varied for given levels of soil moisture and temperature. For the present, it appears that reducing the radiation on either of the semiarid grass species used in this study results in a change in chemical composition. The net effect of reduced radiation levels would probably be a reduction in Mg availability to the grazing animal.

Literature Cited


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