plants in the sward appears to be a better indicator of pasture fertility status than does visual estimate of canopy cover.

A surprising result was a highly significant response of mature red clover plants to increasing exchangeable K levels which indicated declining plant numbers at higher levels of K. The higher levels of K are far below any potential toxicity level, so the result was initially confusing. However, as these data are sample site-specific, the cause of this response is easily explained. In this same grazing study, soil nutrient redistribution by grazing livestock was also measured. Almost all of the sample sites with K soil tests in excess of 400 lb/A exchangeable K were within 150 ft. of watering sites. These sites also had the highest bare ground estimates and lowest grass canopy cover estimates, probably due to overgrazing and soil compaction in these areas. Thus, while red clover plant population initially increased in the general grazing areas as K levels increased, the declining plant population at higher fertility levels is in response to grazing factors, not soil fertility. The red clover population response to soil K described above is one of the reasons why it is important to study forage fertility responses in the pasture environment, not only in small plot settings.

In summary, soil P appears to be a critical factor in establishment and maintenance of red clover in grazed pastures. Red clover plant population increased linearly as soil P increased throughout the range of Bray P-1 values measured in this study. Even though red clover plant population increased at higher P levels, dry matter yield has been shown to peak at much lower soil P levels. BC

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