

## Effects of Grazing Management and Superphosphate Application on Botanical Composition: Some Preliminary Results.

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A major problem with improved pastures is that productivity tends to decline prematurely. In addition to the opportunity cost of lost productivity, the direct cost of replacing the pasture also needs to be considered, with pasture replacement costs varying between \$100-200/ha. An investment of this size needs to be carefully considered and needs to be protected. At current costs and returns, for a merino sheep enterprise, an improved pasture would need to remain in a productive state for 10 years to at least break even on the investment. Yet there would be few 10 year old pastures that are at least 90% as productive as they were two years after planting.

Rather than replacing the pasture completely, it makes more sense financially to renovate the pasture using fertilizer, grazing management and/or pesticides. Grazing management can be a viable alterna-

tive to herbicides. This can be done if the pasture still contains desirable species.

Preliminary data collected from a moderately improved perennial pasture at Rylstone on John Knox's property (one of six field experiments across the central west of N.S.W., funded by the Australian Wool Research & Development Council) shows some of the gains achievable from improved pasture management. The pasture contains perennial grasses, annual grasses and annual legumes in about equal proportions.

During late summer 1991 the site was sampled to determine botanical composition, following different treatments, applied during the previous nine months. Application of superphosphate at the recommended rate, compared to the base rate, increased seedling numbers of subterranean clover by 20% on the continuously grazed plots and by 55% on those plots that had also been rested over summer. A count of viable seeds showed a similar trend suggesting that the benefits from a rest were partially due to improved seed set in late spring, early summer.

The number of weed seedlings was lower where the recommended rate of superphosphate had been applied. We consider this was due to the legume being made more competitive. A major weed component was saffron thistle. The number of saffron thistle plants was reduced by 30% when the recommended rate of fertilizer was applied and by 65% when these plots were also rested over winter. The number of subterranean clover plants was not affected by a winter

rest, provided the recommended fertilizer rate was applied.

Subterranean clover, fertilized and managed properly, provides high quality forage and forms the basis of productive and competitive pastures that can shade out weedy species. This research is showing

some of the ways that resting a pasture at critical times of the year can significantly improve pasture composition. With appropriate management, we feel that longer lived productive pastures can be maintained at relatively low cost.