

## APPLICATION ABSTRACTS

**The response to season, exclosure, and distance from water of three central Australian pasture types grazed by cattle.**

*B.F. Foran, G. Bastin, E. Remenga and K.W. Hyde*

Rainfall is the driving force in any arid zone pastoral system although grazing animals can alter both the vegetation cover and species composition. A gradient of grazing extends from the sacrifice area around a watering point to the region distant from water that is only lightly grazed. This study over eleven years sought to examine the effects on vegetation of both excluding stock from such an area, and the distance from water on central Australian rangelands.

Good seasons during the study period produced prolific growth and meant that the study areas were only lightly grazed by free-ranging cattle. Both season and wildfire had greater effects on plant growth, plant density and plant cover than did exclosure and distance from water. Relationships that may have application in stocking rate determination and drought declaration policy were developed between standing biomass and effective rainfall.

It is concluded that grazing at present stocking levels and under similar management should continue as no harmful effects of stocking have been measured in the last eleven years.

**Runoff and the ameliorating effect of plant cover in the mulga communities of south western Queensland.**

*A.J. Pressland and K.J. Lehane*

Surface runoff in the mulga lands of south western Queensland was recorded from small plots using both natural and artificial rainfall. Runoff was greater from the hard mulga and residual land zones than from the soft mulga zone. Runoff was also higher from areas of high slope, and from soils with hard surfaces and with a high component of fine sand. The presence of plants providing good soil cover and surface litter together with coarse sandy soil were instrumental in decreasing runoff. It is suggested that a basal cover of grasses in excess of 2% should be maintained in these rangelands to help contain erosion and land degradation which can occur by excessive water movement over areas unprotected by plants.

**The efficiency and equity of livestock rating systems and the accuracy of data obtained from them.**

*M.D. Young and G.E. Miles*

Numbers extracted from livestock returns lodged by graziers to Pastures Protection Boards in New South Wales are used by administrators and researchers to identify the number of livestock within these areas. Returns lodged to Pastures Protection Boards understate the number of livestock on grazing properties. At a shire level the number of livestock reported varies considerably between PP Boards and over the entire Western Division is approximately 10% less than the numbers reported to the Australian Bureau of Statistics. It appears that some graziers understate the number of livestock they declare to reduce the rates they pay to their Board.

It is suggested that rating systems which rely on an annual return from land users should be avoided. More efficient and more equitable alternatives exist.

**Tiller development as a possible factor in the survival of the two grasses, *Aristida armata* and *Thyridolepis mitchelliana*.**

*R.F. Brown*

In pastures of mulga lands, wiregrass (*Aristida armata*) appears to be at an advantage over the more desirable mulga mitchell grass (*Thyridolepis mitchelliana*) under heavy grazing. Some of this advantage may arise from different patterns of tiller development. The growing point of mulga mitchell grass elevates earlier than the wiregrass growing point, making it more vulnerable to grazing. Loss of the growing point prevents a tiller from producing any more leaves or a seed head with obvious adverse consequences for the plant as a whole.

To minimize the apparent advantage of wiregrass, it is suggested that pastures be rested whenever possible during periods when mulga mitchell grass is in active growth. Such a strategy would facilitate the build-up of both individual plants and seed supplies.