

APPLICATION ABSTRACTS

Distribution of grey kangaroos in southern, inland Queensland

G.J.E. Hill

This paper discusses the design and results of an aerial survey of eastern grey kangaroo density and distribution across a 47,100 km² strip of southern, inland Queensland. A population estimate of 694,180 was obtained.

The results are considered in relation to habitat zones for the area, defined on LANDSAT band 5 imagery. The study indicates that habitat structure is an important consideration in the design of aerial surveys. With wildlife species such as the eastern grey kangaroo which occupies an extensive geographical range, LANDSAT is a useful data source for relevant habitat information.

The nitrogen and phosphorus concentrations of some pasture species in the *Dicanthium-Eulalia* grasslands of north-west Queensland

T.J. Hall

Direct supplementation of cattle provides the most practical approach to reducing the annual live-weight loss and breeder deaths and to increasing calving rates on low quality pastures in north-west Queensland. The introduction of higher quality species for dry season grazing has not been proven on the bluegrass-brown top grasslands. To provide a basis for implementing protein and mineral supplementation programmes during the dry season, the nitrogen and phosphorus concentrations of the more common species were determined.

The more palatable and higher quality forbs were grazed out early in the dry season. By this time, most grasses had low levels of nitrogen and phosphorus. The Mitchell grasses had relatively high concentrations of both nutrients while Bluegrass, Brown top and Flinders grass had relatively low concentrations. After about 100 days from the start of the growing season, tops of the common grasses had a nitrogen concentration below that required for optimum dry matter intake and rumen function. The phosphorus concentration of tops was also below the level considered necessary for live-weight maintenance of adult cattle and less than that required for growing weaners. After allowing for selection of higher quality species and plant parts, supplementation of cattle with both nitrogen and phosphorus from about 150 days from the start of the growing season, until the next wet season, would be beneficial. Phosphorus supplementation alone is not likely to improve breeder performance unless the nitrogen deficiency is corrected.

The measurement of shrub forage weight: Three methods compared

M.H. Andrew, I.R. Noble, R.T. Lange and A.W. Johnson

It is difficult to measure the quantity of forage available on shrubs. This paper is for scientific readers who have to measure shrub forage in rangelands more rigorously than by guesswork. They have to choose between accuracy and precision on the one hand, and manpower efficiency on the other. The information in this paper helps guide the choice.

Establishment and survival of lucerne in a semi-arid environment

V.E. Rogers

Interseeding depleted rangelands is a common practice in U.S.A., where machines have been developed for this purpose. Lucerne is one of the forage species frequently used. In Australia lucerne is usually sown in arable land, and its establishment on unploughed ground has only been successful where the rainfall is high, as in hill country.

In this study, some methods of lucerne establishment have been compared in two semi-arid environments, using minimal tillage. Sowing into furrows was the most successful method, and with furrows 15 cm wide and 60 cm apart a stand was produced with a population viable after five years, two of which were drought years. The narrower furrows were less successful, and sod-seeding failed completely.

These results are not necessarily limited to lucerne, and could be relevant to the establishment of other species, both native and introduced, where rangeland is to be reclaimed.