

APPLICATION ABSTRACTS

Runoff and soil loss in a semi-arid shrub invaded poplar box (*Eucalyptus populnea*) woodland

G.G. Johns

This paper presents and discusses soil loss and water runoff results from small runoff plots situated on a gently sloping (1%) area of shrub invaded poplar box woodland between Nyngan and Bourke, N.S.W.

Runoff was negligible from the areas where shrubs formed a thicket around the poplar box trees. Monthly runoff from areas of relatively sparse shrubs midway between the box trees averaged 41% of monthly rainfall in excess of 12 mm during the December-March period and 24% of monthly rainfall in excess of 9 mm during the other eight months. By agricultural standards soil loss rates were low, indicating that soil erosion was not occurring at an alarming rate on this gently sloping land.

Estimates of likely runoff based on long term rainfall records indicated that the long term expected runoff is considerable less than has been measured in recent years. The relevance of the results to waterspreading is discussed.

Changes in tiller and tussock characteristics of *Astrebla lappacea* (curly Mitchell grass) after burning

J.C. Scanlan

Wildfires were common in the Mitchell grasslands of north-western Queensland during the late 1970s. The fires completely removed the top growth of curly Mitchell grass and this resulted in several changes in tiller and tussock features after one to two years.

The fires resulted in some desirable changes in curly Mitchell grass: more tillers (shoots) were produced during the first summer and these had more leaf and therefore a higher nutrient concentration. Two years after burning, pasture production and tiller numbers were similar in both burnt and unburnt areas. Most tillers die within three years of being produced and so conditions that cause tiller death without new tillers being produced will result in death of curly Mitchell grass.

Seasonal variations in the herbage mass, crude protein and *in-vitro* digestibility of native perennial grasses on the North-West Slopes of New South Wales

G.M. Lodge and R.D.B. Whalley

Preliminary data on the seasonal variations in the herbage mass, crude protein content and the *in-vitro* organic matter digestibility were used to assess the relative grazing value of the eight dominant perennial grasses in the native pastures of the North-West Slopes. These data indicated a wide range in the grazing value of the native perennial grasses studied and clearly identified *Danthonia linkii* (wallaby grass) as a valuable pasture species and *Aristida ramosa* (wire grass) as a species of low grazing value. The identification of desirable and undesirable pasture species suggests that the future grazing management of these pastures should aim to increase the abundance of the more valuable species, such as *D. linkii*, and to discourage species such as *A. ramosa*.

Botanical and chemical components of the diet and liveweight change in cattle on semi-desert rangeland in central Australia

V.R. Squires and B.D. Siebert

This paper examines the site and the intensity of grazing by beef cattle on an area near Alice Springs, N.T. which contained a variety of vegetation types. The liveweight changes of 12 yearling steers were measured over the growing season (summer) and the diet selected by a group of oesophageally fistulated cattle which grazed with the steers was examined for botanical and chemical composition. Samples of faeces from the non-fistulated steers were also analysed for nitrogen content.

Relationships between liveweight gain and various factors in the diet or in the faeces were used to provide an index or value which would indicate the quality of the pasture and/or degree of liveweight change occurring in the animal. Faecal nitrogen concentration was a good predictor of cattle growth. Of considerable interest is the ability to predict the onset of weight loss. This was shown to occur when faecal nitrogen concentration was in the region of 1.3–1.4% (or about 8 to 9% crude protein).

The average rate of liveweight gain of the steers over a 24 week period, November to April, was 0.6 kg per day, which compares quite favourably with rate of gain on other native pasture situations in the more temperate regions of Australia.

The feasibility of farming kangaroos

N.C. Shepherd

The feasibility of farming kangaroos is examined for both intensive and rangeland conditions. This involves discussion of relevant aspects of kangaroo biology and husbandry, markets for kangaroo products, and some legal and administrative matters that could affect the farming enterprise.

Productivity of kangaroos, as measured by reproduction and growth rates, is lower than for domestic stock. Many husbandry problems must be faced and management practices developed, before kangaroo farming becomes technically feasible. However, it is the lack of substantial and reliable markets for the products that limits prospects most. Existing markets are adequately supplied from the current commercial harvest (a by-product of kangaroo management programs of the states and territories) and farmed kangaroos would probably compete directly with these harvested kangaroos at a considerable cost disadvantage.

Even if technical problems were overcome and markets became available, it is by no means certain the community would tolerate commercialisation of kangaroos to the extent required for farming. The step from commercial utilisation of kangaroos culled as pests of agriculture to unfettered commercial exploitation is a substantial one.

The conclusion is that kangaroo farming is not a feasible proposition at this time. If markets improved substantially and community attitudes were favourable, detailed cost-benefit analyses would be warranted to assess commercial viability.