

## APPLICATION ABSTRACTS

### The manipulation of species composition of natural pastures by grazing management on the northern slopes of New South Wales

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

Despite high annual rainfall (650 mm) and generally favourable climatic conditions the natural pastures of the Northern Slopes of New South Wales are low productivity grasslands. These pastures are dominated by the undesirable warm-season native perennial grass *Aristida ramosa* R.Br. (wiregrass) and contain few of the more valued yearlong green perennial grasses such as *Danthonia linkii* Kunth (wallaby grass). This paper outlines a theoretical grazing management system aimed at decreasing the abundance of *A. ramosa* and increasing *D. linkii* in these pastures. The results of three experiments are presented which show that heavy summer grazing with sheep, coupled with a winter rest, will decrease the abundance of *A. ramosa* and increase the abundance of *D. linkii*. Further work is necessary to show how the principles derived from these experiments can be applied to a whole farm situation, with the potential to increase producers' returns.

### The effect of tracked vehicles on soil strength and micro-relief of a calcareous earth, north of Woomera, South Australia

*M. V. Braunack*

Soil compaction is a form of land degradation now affecting productivity in many areas of Australian agriculture. The increasing use of off-road vehicles in our rangelands is causing concern among pastoralists and researchers because of the compaction and erosion threat. This paper describes the reduction of soil strength and formation of ruts following the measured passage of a tracked vehicle.

### Soil mulches and sprayed coatings and seed washing to aid chenopod establishment on saline soil

*C.V. Malcolm and T.C. Swaan*

Every year, Western Australia loses thousands of hectares of its farmland to salt encroachment. Researchers are attempting to reverse the hydrological changes which have caused the problem, but in the meantime, farmers are vitally interested in getting some value out of the affected land.

The authors have investigated promising halophytic shrubs which could provide valuable grazing on these saline areas, and have identified four as particularly promising. This paper describes research directed at finding practical ways to establish the shrubs on saline sites.

## **A simple single disc pitting and seeding machine for arid rangeland revegetation**

*G.A. Gintzburger and P.W. Skinner*

Desertification is increasing in most of the world's arid rangelands. To counter this, range managers' efforts nowadays are partly directed towards revegetation programmes combining rainwater harvesting and seeding of drought-resistant or drought-evading plant species.

Revegetation machinery available commercially in Australia and U.S.A. is too expensive to build, operate and maintain for Australian pastoralists or rangeland regeneration projects in developing countries.

The single disc pitting and seeding machine was developed as part of a testing programme for annual *Medicago* spp. in Western Australian rangelands. It is cheap to build and operate behind a car, requiring neither a tractor nor hydraulics for transport and operation. This machine was tested satisfactorily on various types of degraded rangeland in the Eastern Goldfields and Shark Bay regions of Western Australia.

## **An economic study of the Western Division of New South Wales**

*Lloyd Davies*

The main purpose of the Hassall Report was to provide the Western Lands Commission of New South Wales with accurate information on grazier financial performance. Using this information, government authorities can make better policy decisions for the Western Division of N.S.W.

One of the main issues for government to consider is the effect of size limitations on profitability. This report provides evidence of increased profitability with increased flock size. It also highlights the problem of lower profitability on shrub-invaded country – a disturbing feature of a considerable area in western N.S.W.

The report has been used as a major reference for the recently completed Joint Parliamentary Committee Enquiry into the Western Division of N.S.W. and has influenced a number of the economic recommendations of this report. A brief summary of the financial results, a comparison of these results to other agricultural areas and the major policy recommendations made in the report are given.

## **Research aspects of the human ecology of settlement in the Australian arid zone**

*Don Parkes*

Urban communities are growing, in number and complexity, throughout the Australian arid lands. These communities and settlements are a new form of arid zone land use, especially in relation to tourism and mining. To date there has been very little systematic study of the ecological processes and the ecological patterns associated with these places.

Those concerned with the management and planning of human settlements in the arid zone, especially in relation to the tourist industry, might find that some of the principles of human ecology and human geography, in which time-related factors are given explicit consideration, prove to be of interest.

## **Pastoral land tenure options in Australia**

*M.D. Young*

Pastoral land tenure is one of the most hotly debated and poorly understood of Australia's rangelands issues. This paper identifies land tenure options which have the object of maintaining the pastoral industry and minimizing land degradation. None of the current 27 forms of pastoral lease in Australia meet more than 2 of the criteria necessary to achieve these objectives. A new form of lease is proposed.

## **Prospects for land use planning in arid Australia**

*K.D. Cocks and C. Parvey*

The paper discusses the range of controls available to authorities for controlling the ways arid lands are used and the ways in which those uses are to be managed. Knowledge of these alternatives is important for arid zone residents if they are to forcefully influence the choices of controls made on their behalf.

## **Some economic and social factors affecting the cattle industry in The Gulf area of the Northern Territory – Results of the 1982 Cattle Industry Survey**

*Valerie J. Michell*

Australia's beef cattle industry has suffered seriously from the effects of poor price periods over the past decade. The demands on pastoralists imposed by the national brucellosis and tuberculosis campaign is accentuating their economic problems.

A study of the results of the 1982 Cattle Industry Survey showed that the more developed stations ran more cattle at higher stocking rates; that branding rates and turnoff were higher and costs per head run were lower. However only one-third of the stations in the area covered their operating costs with returns from cattle and these were mostly the smaller, less developed, owner-operated stations. More stations are being bought by owner-managers.

With adequate finance a combination of owner-management with the production advantage that accompany developed stations may result in viability.

## **Studying pastoral property management in the arid zone**

*Melissa Gibbs*

This study of pastoral property management was conducted to help identify ways to improve land resource management at the property level. It examines the effect of different management strategies on range condition, and compares the ways different management strategies can affect property profitability.

In this paper, the role of the crucial human element in management is examined. Managerial behaviour, like all human behaviour, is influenced by an individual's goals and abilities, as well as the resources available to him/her. Consequently, understanding how human factors are related to management strategies enables advisers to promote the "better" management strategies more effectively by taking into account the background and aspirations of the people they are dealing with.