

APPLICATION ABSTRACTS

The nutrient status of sheep grazing on a dry Mitchell grass pasture association in central-western Queensland.

N.P. McMeniman, I.F. Beale and G. Payne.

The intake and digestion of nutrients by sheep grazing on a dry Mitchell grass pasture association were studied; intact wethers and others equipped with either oesophageal fistulas or intestinal cannulas were used for this purpose. The results obtained from these observations were then extrapolated in an attempt to explain the poor lambing performance of ewes grazing the same pastures. Energy was apparently the primary limiting nutrient and the potential intake of energy from pasture may be increased by ensuring an adequate supply of rumen digestible nitrogen through the effective provision of a non protein nitrogen supplement such as urea. Supplementation should start at least four weeks before the ewes begin to lamb to allow sufficient time for supplement intake to reach the required level. A further conclusion from the study was that on properties in central-western Queensland where autumn matings are practised these should not be any later than April. This would ensure that if winter rains did not eventuate then the ewes would have reasonable quality pastures that had grown during the summer period available to them during the lambing period.

Soil surface features as indicators of rangeland site productivity

D.J. Tongway and E.L. Smith

A field method for determining the degree and extent of eroded soil surface is required as an indicator of rangeland site productivity in red earth landscapes. However, previous attempts have been hampered by an inadequate definition of the observable features used to arrive at a classification. This paper describes a study near Cobar, New South Wales in which features observable in the field were used to classify the soil surface. A computer analysis of 26 features showed that only five were necessary to adequately classify the surfaces. Comparison of the computer classification with an independent field classification gave good agreement. Surface soil sampled from the full range of soil classes and analysed for properties related to stability and fertility indicated that the classification discriminated between soils with different productive potential. Herbage sampled from a subset of quadrats also satisfactorily reflected the classification. The classification procedure could be learnt and satisfactorily used by field-workers in a relatively short time. The procedure is therefore recommended for routine use, in the assessment of soil degradation, particularly when herbage is absent.

Bladder saltbush (*Atriplex vesicaria* Heward ex Benth) regeneration on the Riverine Plain of south-eastern Australia since 1983.

D.K. Clift, K.L. Dalton and J.C. Prior.

A survey was conducted over the summer of 1986-87 to determine the distribution, pattern and characteristics of bladder saltbush regeneration on the Riverine Plain of south-eastern Australia, after the dieback event of 1977-1983. This work followed a previous survey (Clift *et al.* 1987), which found that the distribution of leafy bladder saltbush on the Riverine Plain had declined from 1.1 to 0.5 million hectares during the dieback period. Despite reports of good regeneration by landholders during the period 1984-1986, dieback-affected stands still remain evident in many areas, particularly south of the Murrumbidgee river.

The survey indicated that:

- (i) the area of healthy saltbush had increased by 53 per cent, from 0.53 to 0.81 million ha, over the period since 1983;
- (ii) of the original pre-dieback area, 28 per cent (0.32 million ha) still remained devoid of saltbush;
- (iii) the degree of regeneration experienced on any holding was closely associated with the vigour of pre-dieback stands, and that vigour of stands was largely determined by soil type and grazing practices.

A survey approach to evaluating the effects of management on semi-arid and arid lands in New South Wales

B.H. Downing and J.C. Evans

The vegetation of rangeland is so highly variable that management practices, including stocking rate, are best determined for each paddock on an individual basis.

Any appropriate kind of management can be selected for a paddock, whether burning, or grazing by sheep or goats. This study does not show any statistically significant differences between these managements with respect to effects on woody cover or pasture cover. However, the following trends are indicated for woody plants less than 2m tall in mulga country: sheep may promote the growth of woody plants; goats may suppress the growth of edible woody plants; and an occasional burn has little effect in reducing woody cover. Further trials are needed to fully assess the impacts of these kinds of management, especially in respect of their effects on herbaceous quality and quantity in the pastures.

The only statistically significant management improvement shown was that of protecting or spelling the pasture from grazing. Spelling was of benefit in increasing the overall pasture cover, especially of grasses. Periodic spelling is therefore recommended as part of the management system for every paddock irrespective of the other kinds of usage, whether burning or grazing by whatever kind of animal.

Blade ploughs as an alternative to tined rippers for rabbit warren destruction in semi-arid areas

L.P. Hunt

Rabbit control is not widely practised in many parts of semi-arid South Australia because it is regarded as being too expensive. The cost of control must be reduced to encourage more landholders to embark on rabbit control programmes.

This experiment compared a 1.8 m tractor-mounted blade plough with a conventional two-tine ripper for the cost and effectiveness of rabbit control by warren destruction. The 1.8 m ploughing width of the blade plough should mean fewer passes per warren and so reduce costs.

The blade plough was faster in destroying warrens but was slightly less effective than the ripper. This means follow-up work is greater for the blade plough. The choice of a tractor well suited to the blade plough is important to avoid bogging the tractor. Frequent bogging increases costs.

Where a landholder owns a suitable tractor and the rabbit density is high, the blade plough can result in slightly cheaper rabbit control than a conventional two-tine ripper. Consequently, the return on an investment in rabbit control is slightly greater for the blade plough.

Electric shock conditioning of sheep to avoid feed supplement troughs in field investigations of diet supplementation

M.J.D. Martin, D.A. Pritchard, and R.G.A. Stephenson

A technique for conditioning sheep not to eat supplements was examined under paddock conditions. A standard electric fence energizer was connected to a supplement trough. Two different flocks of sheep were allowed access to the trough with the energizer switched off. Each flock was divided into three treatment groups. Two groups acted as controls and were removed from the treatment yard. The two treatment groups of both flocks were then exposed for one and three days exposure respectively to an electric shock of 6,500 volts if they tried to consume supplements. Whether each sheep refrained from feeding from the trough was checked in pens, one and four weeks later, and then under paddock conditions in weeks 6, 18, 22 and 26.

In both control groups 100% of animals continued to eat the supplement throughout the experiment. The rate of avoidance behaviour for both of the treatment groups was approximately 72%. Further exposure to an energized supplement trough resulted in all animals exhibiting avoidance. While the technique was only partly successful it provides a means of comparing supplemented and non-supplemented sheep within one paddock.