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Tropical pastures - the future — by John Hopkinson and Joe Miller on pages 132 to 138.
The opening paper of the conference described issues affecting tropical pastures. These issues concerned the welfare of land, landscapes and livestock, and about the socio-political climate. They included ley farming systems (particularly the role of legumes); the wisdom of pasture renovation and accompanying nutrient depletion; the importance of diversity; value of natural rangeland; weeds; tree clearing; mine rehabilitation; co-existence with the environment movement; the decline of pasture plant introduction; changing attitudes to beef consumption; animal welfare and methane emissions; and the future of rural communities. Technical and economic issues no longer predominate, tending to be replaced by community ones and the implications of this. Members of the Society were exhorted to [play a more active part in the nation-wide dialogue about future land use.

Soil fertility and animal productivity in the Nebo-Broadsound district of central Queensland —by Jon Burgess and Claire Barrett, on pages 139–146.
The relationship between soil fertility and estimated animal performance in the district was examined. Total soil nitrogen and available phosphorus in the surface soil can be used to classify grazing productivity. Soil levels of 0.08% for total nitrogen and 10 ppm available P are minimum critical levels in country used for fattening. Land with lower fertility is more suited to breeding or growing enterprises.

Minesite rehabilitation —by Mike Gilbert, on pages 147–154.
Minesites in Australia are often developed on pastoral or cropping properties, They must be returned to land use capability similar to the prior land use. Unless topsoil is returned to the area, revegetation will encounter harsh soil and moisture conditions. Some of the issues are discussed and points to the principles that can be adopted from the large pool of agronomic research from the Australian tropics.

Which grass for where? —by Bruce Cook and Bob Clem, on pages 156–161.
Grasses throughout the world have developed mechanisms to survive under a wide range of conditions. There is variation in growth habit, soil preferences, drought and flood tolerance. A number of exotic tropical species can be used for forage, soil conservation and soil improvement in the subhumid subtropics.

Pastures on cropping soils: which tropical pasture legume to use? —by Bruce Pengelly and Maurie Conway, on pages 162–168.
Producers are more interested in short-term and long-term ley pasture legumes because of soil fertility decline and changes in the economics in cereal and beef production. Several legumes, including lablab, leucaena, butterfly pea, caatinga stylo and desmanthus, are available for the tropical

and subtropical cropping zone. The best uses of these legumes are described and suggests areas of research and development.

Managing long-term fertility of cropping lands with ley pastures in southern Queensland —by Errol Weston, John Doughton, Ram Dalal, W. Strong, G. Thomas, J. Lehane, J. Cooper, A. King and C. Holmes, on pages 169–176.
Ley farming has been used for centuries in temperate and Mediterranean areas of the world. Despite decades of research, the uptake by farmers in southern inland Queensland has been slow. This could be due to low profitability, more difficult management, reluctance to change, looking for easier options, other available land, and bloat fears with temperate legumes. However, as fertility declines to critical levels for wheat and protein levels, farmers are sowing increasing areas of ley pasture.

Grass, grass + legume or legume leys: a South African experience —by Norman Rethman, on pages 177–179.
In the first year after leys, the best maize crops followed pure lucerne and grass-legume. In the second year, lucerne with grass was best. Combining grass and legumes have the advantage of yield, lower inputs and reduce bloat risk.

Understanding grazing lands for better management: are we making any progress? —Mick Quirk, on pages 182–191.
This provides a current understanding of the ecology of grazing lands and the implication for management. The importance of an open, but critical, approach is stressed rather than pseudoscience and unfounded generalisations. R&D providers and producers must interact better and more continuously. The foundations for understanding include rainfall variability, soil nitrogen, grazing management, tree–grass interactions, fire and selective grazing.

Grasslands, grazing animals and people —How do they all fit together? —by Wal Whalley, on pages 192–198.
People used to regard pasture as a crop and so sought the miracle species. This lead to indiscriminate introduction of new species. It meant that farmers relied on cultivation, sowing, fertilising and herbicides for management. However both manager and livestock are part of a complex ecosystem and recognition of this should lead to a more sustainable approach to grazing land management.

Legumes into native pasture – asset or liability? A case history with stylo —by Andrew Noble, David Orr, Col Middleton and L. Rogers, on pages 199–206.
Stylo planted into 1 million hectares of native pasture has had a significant impact on the northern grazing industry through higher productivity and market flexibility. However, legume dominance can accelerate soil erosion and acidification. Solutions based on soil acidity risk mapping and pasture management are discussed.

Cell grazing —the first 10 years in Australia —by Terry McCosker, on pages 207–218.
Cell grazing is looked at as a paradigm shift at industry level and could become accepted science within another 10 years. Results obtained from properties in eastern Australia show that profitability, soil fertility, rainfall use efficiency and biodiversity have generally improved, but animal performance has been variable. Cell grazing is a high-level, time-control method different from other rotational grazing systems.

Cell grazing — a producer's perspective —by Robin Sparke, on pages 219–222.
This paper describes changes in pasture condition and composition, rainfall use efficiency and profitability between 1994 and1998.

Change the management and what happens—a producer's perspective —by Shane Joyce, on pages 223–229.
Past management of Shane's brigalow pastures was intensive, expensive and unprofitable. A different management system incorporating timber retention, no fire, native species, beef per hectare and low cost has improved the resource through cell grazing. The conventional wisdom of the systems of managing brigalow lands is questioned.

Faecal NIRS—what does it offer today's grazier —David Coates, on pages 230–240.
Analysis of faeces ca be an educational and decision support tool as it reveals what the animal is eating and hence its performance. Calibration equations have been established to predict dietary crude protein, digestibility, grass, legumes, forbs and browse. Other equations are being developed to predict fibre content, intake and animal growth rates. Aspects of sampling and the limitations of the technology are discussed.

The nature and management of rehabilitated pastures on open-cut coal mines in central Queensland —by Andrew Grigg, max Shelton and Ben Mullen, on pages 242–250.
Much rehabilitation involves sowing improved pastures grasses and legumes to give rapid cover and then grazing. These pastures are notably different to those in the surrounding country. Surface stability is the main issue in establishment and maintenance of the systems, and so management may have to more intense than in normal pastures.

Approaches to biodiversity on rehabilitated minelands in South Africa —by Norman Rethman, on pages 251–253.
In South Africa, rehabilitation has moved from an emphasis on preventing erosion to establishing productive grasslands, and to restoration or creation of a diversity of landscapes. Although the local resources determine post-mining land use, once dictatorial regulatory organisations are now listening to the local populace when considering the objectives of rehabilitation.

Effects of pasture cover on soil erosion and water quality on central Queensland coal mine rehabilitation —by Chris Carroll and Andrew Tucker, on pages 254–262.
The greatest risk of erosion is before a pasture cover is established. Once grasses colonise the surface, slope is less important and the salt in runoff water is reduced, except where the soil surface crusts. Rhodes grass can reduce soil salinity. Burning increased runoff and erosion for about month.

Weeds in pasture ecosystems—symptom or disease? —by Tony Grice and Shane Campbell, on pages 264–270.
Weeds use the same resources as forage plants but package them in a form that makes them unavailable top livestock. Weeds are either strongly competitive or exploit the absence of competitors. Ecological weed management has to understand how to reduce the capacity of the weed to capture resources or how to recover them. Heavy grazing reduces competition against weed. Effective biological control agents reduce the capacity of the weed to capture resources.

Weed biology—a foundation for weed management —Shane Campbell and Tony Grice, on pages 271–279.
To develop integrated weed control strategies, we need to understand the biology of a weed— how long does the weed live, how long before it drops seed and how long does the seed last in the ground?

Options for effective weed management —by Joe Vitelli, on pages 280–294
For effective control, a weed has to be targeted precisely. Each control method has advantages and disadvantages and there is no single magic wand. Single treatment methods are being replaced by integrated control—encompassing chemical, physical and biological control along with effective education and extension of the management components. Prevention and early interventions are still the most cost-effective system.