

Current levels of utilisation of pasture on extensive cattle properties in northern Australia

R.A. Cowley^A, C.M. Blomfield^B, M.B. Tarrant^A and N. MacDonald^A

^ANT DPIFM, PO Box 1346, Katherine, NT 0851 Australia, robyn.cowley@nt.gov.au

^B Carthona Agriculture, 50 Whittings Rd, Guanaba, QLD 4210 Australia, charlieb@carthona.com.au

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Introduction Pastoral stations in the Victoria River region of northern Australia have an average size of 3275km², and paddocks, which are typically sparsely watered, average 130km² (Oxley 2005). Cattle producers estimate that reducing paddock size and adding waters will increase carrying capacity by 20-40% over the next ten years (Oxley 2005). A grazing trial in this region found that 20% of annual pasture growth was a sustainable level of off-take on relatively fertile, basalt-derived blacksoil grasslands (Cowley *et al.* 2007). This study aimed to investigate the potential for further development in the northern cattle industry, by examining current levels of utilisation in the region.

Materials and Methods Average pasture growth between 1992 and 2007 was modelled using *GRASP* (Littleboy and McKeon, 1997) for each land system of 12 cattle properties, using model parameter sets developed by Cobiac (2006). GIS was used to calculate total land system area and land system watered area within a 3km and 5km radius of known artificial and natural waters, and average pasture growth for the property was calculated for each land system by total and watered area. Land system area was discounted for accessibility, where land was inaccessible to cattle due to cliffs, rugged terrain or submersion (lakes and coastal saline mudflats). Total animal intake per property was calculated by multiplying animal equivalents by intake per animal equivalent of 8.27kg/day. Whole property estimates of utilisation were made based on recommended levels for black soil of 20%, good red soil of 15%, less resilient red soils of 10% and rugged escarpment and *Triodia*-dominated vegetation of 5%.

Results and Discussion Estimated utilisation levels vary greatly depending on whether accessibility and watered area are taken into account (Table 1). While average estimated utilisation across entire properties was close to recommended levels of 11%, cattle are known to spend most of their time within 2.5km from water in this region (Leigh Hunt unpublished data). An assumption that cattle only grazed within 3km from water would result in estimated utilisation rates closer to 31%. This suggests that there is potential to reduce actual utilisation levels with further water development. Improved levels of individual animal performance would probably result, as performance declines above 20% utilisation (Cowley *et al.* 2007). There was considerable variation between properties, and some with lower utilisation rates may have the potential to sustainably increase stock numbers with additional infrastructure.

Table 1: Average and (range) in utilisation levels in the Victoria River region, northern Australia.

Median Pasture Growth kg/ha/yr	Recommended utilisation level (%)	Current utilisation total area (%)	Current utilisation accessible area (%)	Current utilisation accessible area <5km water (%)	Current utilisation accessible area <3km water (%)
1517(1054-1831)	11(7-14)	10(4-19)	12(4-22)	18(10-31)	25(14-47)

Cattle may graze further from water during the rainy season, which would reduce actual utilisation rates by increasing available grazing area. However little information is available to estimate wet season grazing range, so this was not included in this analysis. While it is unknown how representative the stations selected were, they covered the geographic extent of the region and represented 38% of the total number. This information will be used as a basis for a regional economic analysis of potential industry development in northern Australia.

References

- Cobiac, M.D. 2006. Predicting native pasture growth in the Victoria River District of the Northern Territory. Doctoral Thesis, The University of Adelaide, Australia.
- Cowley, R.A., McCosker, K.D., MacDonald, R.N. and Hearnden M.N. 2007. Optimal pasture utilisation rates for sustainable cattle production with a commercial Brahman herd in the Victoria River Downs region of the Northern Territory. In: Proceedings of the Northern Beef Research Update Conference, Townsville 2007, North Australia Beef Research Council, 34-44.
- Littleboy, M. and McKeon, G. M (1997) Subroutine GRASP: Grass production model. Appendix 2 of Evaluating risks of pasture land degradation in native pasture in Queensland. Final project report for Rural Industries Research and development Corporation project DAQ124A.
- Oxley, T.J. 2005. Pastoral Industry Survey 2004: Katherine. Northern Territory Department of Primary Industry, Fisheries and Mines, Darwin.