

**PROCEEDINGS OF THE AUSTRALIAN RANGELAND SOCIETY  
BIENNIAL CONFERENCE**

**Official publication of The Australian Rangeland Society**

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Author family name, initials (year). Title. *In*: Proceedings of the nth Australian Rangeland Society Biennial Conference. Pages. (Australian Rangeland Society: Australia).

For example:

Anderson, L., van Klinken, R. D., and Shepherd, D. (2008). Aerially surveying Mesquite (*Prosopis* spp.) in the Pilbara. *In*: 'A Climate of Change in the Rangelands. Proceedings of the 15<sup>th</sup> Australian Rangeland Society Biennial Conference'. (Ed. D. Orr) 4 pages. (Australian Rangeland Society: Australia).

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# GRAZING BEHAVIOUR OF *BOS INDICUS* CATTLE ON RANGELANDS IN NORTH-EASTERN AUSTRALIA

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## Introduction

This project investigated the grazing behaviour of *Bos indicus* cattle in relation to different soil-vegetation associations in north eastern Australia.

The study was conducted 100 km south of Charters Towers in the semi-arid tropical savannas of north Qld. The landscape is gently undulating with the pasture dominated by perennial native grasses, viz *Heteropogon contortus*, *Bothriochloa bladhii*, *B. ewartiana*, *Dicanthium sericium*, *Chrysopogon fallax* and *Aristida calycina*. Three soil-vegetation associations were identified and designated by the dominant tree species: box (sodosols); brigalow (vertosols); and ironbark (kandosols).

The trial was designed as a split plot with each of the paddocks acting as the main plots and soil-vegetation associations representing sub plots.

## Cattle Observations

The cattle (Brahman [5/8] X Shorthorn [3/8] steers) were placed in the paddocks in December 1998. Two different stocking rates were used.

Behaviour which related only to grazing/non-grazing periods was recorded. Cattle were observed from horseback on five separate occasions between April 1998 and April 1999. Activities were defined by the behaviour of 80% or more of the herd.

## Pasture Assessment

Pasture assessment involved rating the pasture for greenness, steminess, height and forage biomass on the day before cattle observations began. Pasture leaf samples were collected for nitrogen analysis.

## Results

### Pasture quality

There was a significant seasonal influence ( $P < 0.05$ ) on all the pasture characteristics measured. A strong soil-vegetation association effect on the steminess of the pasture was also detected ( $P < 0.05$ ). There was also a strong interaction ( $P < 0.05$ ) between season and soil-vegetation associations. The ironbark association was relatively insensitive to seasonal changes; it had a constantly higher proportion of stems compared to the other two associations. The box association had a pronounced seasonal fluctuation in the proportion of stems present in the pasture. It also had a consistently lower proportion of stems than the pastures found on the other two associations. The brigalow association was intermediate in the proportion of the stems present.

### Grazing behaviour

There was a significant soil-vegetation association effect ( $P < 0.05$ ) influencing the grazing preference. The cattle tended to favour the box association and avoid the ironbark association. This preference was correlated with the proportion of steminess of the pastures within each of the associations. This was demonstrated by all of the associations having similar degrees of greenness and nitrogen content but different degrees of steminess. Table 1 shows the grazing preference of the cattle.

**Table 1:** Cattle preference for the three soil-vegetation associations

Association	Box	Brigalow	Ironbark
Mean Rank*	1.58a	2.08ab	2.34b

\* ranks followed by a common letter are not significantly different ( $P > 0.05$ )  
(For each paddock x season combination, the ratio of % grazing time to % area was calculated for each soil-vegetation association. Preference for grazing indicated by lower figure for mean rank.).

Stocking rate had no influence on grazing behaviour.

## DISCUSSION/CONCLUSIONS

### Pasture quality

The consistent differences between the greenness, height, herbage mass and steminess of the pastures was attributed to the amount of rainfall received. The nitrogen content of the pastures varied between the seasons, but the differences were not as marked as for the other pasture characteristics. Seasonal variations appeared to be the major contributing factor to the proportion of stem present in the pasture on each of the soil-vegetation associations. In addition, the particular pasture species found on each association and the way they responded to the rainfall were also contributing factors to the proportion of stems present.

### Grazing behaviour in relation to pasture characteristics

There was a hierarchy of grazing preference based on the proportion of stem found in each of the pastures on the different associations. The cattle spent proportionally more time in the box association than on the other two. This supports Reppert (1960) who found that cattle tend to select leaves over stem and coarse forage.

None of the pasture quality parameters of greenness, height, herbage mass or nitrogen content appeared to influence the behaviour of the cattle. This contrasts with work by Reppert (1960) who showed cattle preference is for green forage compared to old forage and Dwyer *et al.* (1964) who demonstrated that colour (nitrogen content) was a factor which influenced the cattle selection. The results in this trial also contrasted with work by Bailey (1995) who observed that cattle preference was for areas with high crude protein levels. The results from the current project suggest that the proportion of stem in a tropical native pasture may be an influential factor affecting grazing behaviour in relation to soil-vegetation associations.

This study has shown the possibility of using the proportion of stems as a guide to predict preferential grazing in semi-arid tropical savannas.

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