

# The potential to increase beef production in tropical northern Australia by including *Desmanthus cv JCU 2* in a buffel grass (*Cenchrus ciliaris*) dominant pasture.

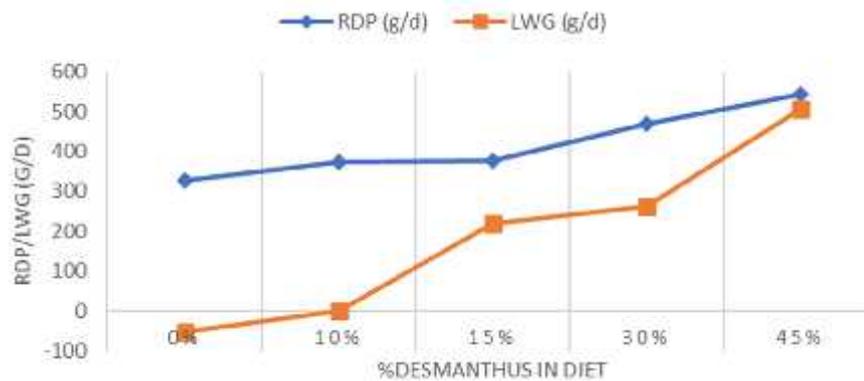
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The inclusion of an adapted and persistent legume in either native or improved grass pastures of tropical northern Australia should increase livestock productivity in the dry season, when pasture plants are in phase 3 or reproductive phase of growth, by supplying critically limiting rumen degradable protein (RDP) to support optimal rumen function (Minson, 1977; Poppi *et al.*, 2018). The legume *Desmanthus* spp. is high in RDP compared with tropical grasses and has been shown to be both well adapted and persistent in buffel grass dominant pastures in tropical northern Australia (Gardiner & Parker, 2012).

The objective of this study was to determine the potential change in intake of RDP and model the potential increase in daily live weight gain (LWG) of steers consuming phase 3 buffel grass as the amount of phase 3 *Desmanthus cv JCU 2* (JCU 2) in the diet increased incrementally from 0 to 45% of dry matter. Phase 3 buffel grass and phase 3 JCU 2 were produced at James Cook University, Townsville. Nutritive analysis using near infrared reflectance spectroscopy (NIR) provided estimates of crude protein of 53 and 130 g/kg DM and RDP of 39 and 96 g/kg DM for buffel grass and JCU 2, respectively, and an M/D for buffel grass of 9MJ ME/kg DM. Modeling was performed using Australian feeding standards (MLA, 2015) for a 300kg *Bos indicus* steer walking 7km/d with a maximum potential DMI of 2.8% of liveweight at intakes of JCU 2 of 0%, 10%, 15%, 30% and 45% in dry matter.



**Figure 1. Intakes of rumen degradable protein (RDP; g/d) and estimates of liveweight gain (LWG; g/d) for a 300kg *Bos indicus* steer walking 7km/d consuming buffel grass and *Desmanthus cv JCU 2* at 0%, 10%, 15%, 30%, and 45% in dry matter.**

Intake of RDP increased from 327 g/day for a diet of buffel grass alone to 543g/d for a diet containing 45% JCU 2 in dry matter. Modeling suggested steers will lose weight on a diet of buffel grass alone, maintain weight on a diet providing 10% of dry matter as JCU 2 and grow at 250 and 500 g/d with intakes of JCU 2 of 30 and 45% of dry matter, respectively. We propose that an intake of *Desmanthus cv JCU 2* of 10% of dry matter has the potential to maintain liveweight of *Bos indicus* steers grazing a pasture dominant in buffel grass during the dry season of northern Australia. Increasing the proportion of *Desmanthus cv JCU 2* above 10% of DMI is likely to produce positive rates of LWG during the dry season.

## References

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