

FEEDING A PROTEIN AND ENERGY SUPPLEMENT TO BOOST THE GROWTH OF CATTLE GRAZING NATIVE PASTURES IMPROVED WITH LEGUMES

YANG GUO RONG^A, G. B. ROBBINS^B and C. J. PATON^B^ABeef Cattle and Pasture Research Centre of Yunnan Province, Kunming, China.^BQueensland Dept of Primary Industries, Brian Pastures Research Station, Gayndah, Qld 4625.

It is well-known that sowing legumes into native pastures in sub-coastal south-east Queensland usually leads to increased cattle production (Addison *et al.* 1984). Likewise, the responses to feeding supplements of protein or energy to cattle on native pastures are also well known (Gulbransen *et al.* 1990; Taylor and Gulbransen 1990). Surprisingly, few studies have examined the benefits from feeding supplements to cattle grazing native pastures improved with legumes. Addison *et al.* (1984) did this in part, when they fed protein meal to cattle grazing native pasture plus leucaena, leading to 20 kg/head more live weight than cattle on leucaena. The next option is to feed a supplement with extra energy, which we did to cattle grazing native pasture improved with legumes.

The experiment was located at Brian Pastures Research Station, with treatments: T1, native pasture (predominantly speargrass and forest bluegrass); T2, native pasture plus leucaena (growing in 25% of the paddock); T3, native pasture plus shrubby stylos (Fitzroy, CPI 49834 and CPI 55857); T4, native pasture plus leucaena plus supplement (1.0 kg barley and 0.5 kg cottonseed meal per head per day, fed daily) (based on work cited above); T5, native pasture plus shrubby stylos plus supplement (as for T4 above).

There were 12 paddocks, with 2 replicates of treatments 1, 2 and 4, and 3 replicates of treatments 3 and 5. Supplement treatments were allocated at random to pre-existing pasture treatments. Pasture yields were at least 1500 kg DM/ha throughout the experiment. Weaner Brahman-cross steers (average starting weight of 180 kg) grazed the experiment for 126 days from 12 June to 16 October 1991, at a stocking rate of 0.8 weaners per hectare. Rainfall in this time was only 43 mm, 27% of the long-term average.

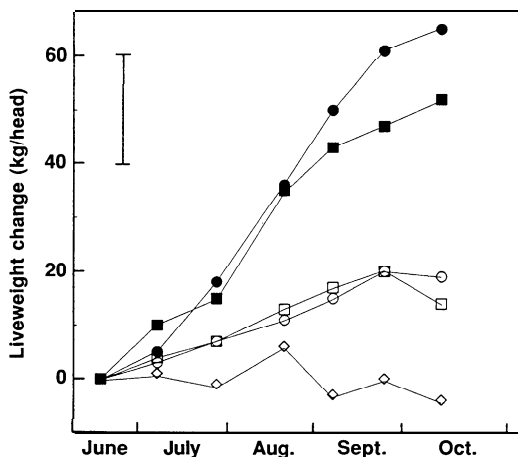


Fig. 1. Cumulative liveweight change of steers for T1 (◇), T2 (○), T3 (□), T4 (●) and T5 (■) treatments. Vertical bar indicates average l.s.d. for final liveweight change at $P = 0.05$.

Liveweight changes for the 126 days averaged -4 kg for native pasture, 19 kg for leucaena, 15 kg for stylos, 65 kg for leucaena plus supplement and 52 kg for stylos plus supplement (Fig. 1). The advantage due to legumes was 21 kg. Feeding 189 kg of supplement gave an extra 42 kg weight gain. Thus, every 4.5 kg of supplement produced 1.0 kg of extra liveweight.

At a price of \$A140/t (fed out) for barley and \$270/t for cottonseed meal, the extra 42 kg of liveweight is estimated to have cost about \$35 per head. If the extra live weight is valued at \$1.20/kg, the extra value of each steer is about \$50, giving an apparent profit of \$15 per steer.

The positive benefits from feeding this protein and energy supplement in the dry season to cattle grazing native pastures improved with legumes suggest that these supplements and legumes have a complementary rather than competitive role. Further testing is needed, to see how the practice may fit into particular production systems.

(The senior author gratefully acknowledges financial support from the Australian International Development Assistance Bureau for his training in Australia).

ADDISON, K. B., CAMERON, D. G. and BLIGHT, G. W. (1984). *Trop. Grassl.* **18**:121-30.

GULBRANSEN, B., STANDFAST, N. F. and KEMPTON, T. J. (1990). *Proc. Aust. Soc. Anim. Prod.* **18**: 236-9.

TAYLOR, K. M. and GULBRANSEN, B. (1990). *Proc. Aust. Soc. Anim. Prod.* **18**: 388-91.