

## SUPPLEMENTATION OF TROPICAL FORAGE DIETS WITH PROTECTED PROTEINS

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Tropical native pastures rapidly decline in digestibility and nitrogen (N) content with the onset of the dry season. Nitrogen supplementation is offered as a management strategy to overcome the dry season nutritional deficit. Most of the tropical research on N supplements has been with protein meals of unknown degradability or with urea. The work of Kempton and Leng (1979) with low quality forage and proteins of known degradability has stimulated interest in similar work with cattle fed tropical forage diets.

Native pasture hay (predominantly *Heteropogon contortus*) containing 0.4% N was chaffed and fed *ad libitum* to steers of 170 kg live-weight held in pens. In the first experiment supplements of 40 g N as urea plus sulphur (US) or formaldehyde casein (FC) and US+FC were offered. Animals offered the control diet (NP) lost 285 g liveweight per day whereas the US and FC supplemented animals maintained weight. When US+FC was fed these animals gained 121 g per day.

In a second experiment using similar steers and the same basal diet the US and US+FC treatments were compared with a supplement of 500 g of a mixture (PP) containing meat and bone meal, fish meal and formaldehyde-treated cottonseed meal in the ratio 1:1:8 (Hennessy, 1978). Table 1 gives the results from experiment 2.

Table 1. Mean liveweight change (LWC) and mean dry matter intake (DMI) for steers fed nitrogen supplements over 71 days.

	Native pasture	Urea	Treatment		Urea plus protected protein	SE of treatment means
			Urea plus Formaldehyde Casein	Protected protein		
LWC (g/d)	-407a*	-320ab	-207b	+109c	+207c	61
DMI (kg/d)	2.26a	3.01b	3.34bd	3.72d	4.43c	0.18

\* Means with dissimilar superscripts are significantly different ( $P < 0.05$ ).

The control animals lost weight at a faster rate than in experiment 1 and feeding US and US+FC merely reduced the liveweight loss. However, supplements of protected protein (FP) or PP plus US produced a liveweight gain.

These two experiments have demonstrated a liveweight response to the supplementation of tropical forage diets with protected proteins. The inclusion of urea will give an added response but the benefit of PP alone may be generally sufficient when poor quality pasture is available. The PP mixture has the advantage of being palatable and without a toxicity risk.

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