

A COMPARISON OF TWO NON-PROTEIN NITROGEN SOURCES AS SUPPLEMENTS FOR STEERS FED LOW QUALITY TROPICAL FORAGE DIETS

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Urea is widely used as a source of non-protein-nitrogen (NPN) in supplements offered to cattle during the tropical dry season. There are potential toxicity risks associated with urea feeding and a low toxicity NPN may have a role in supplements which are consumed by cattle at infrequent intervals. One such NPN is Isobutylidene diurea (IBDU) which is available as a slow release garden fertilizer. Some recent research has shown that a slowly degraded source of ruminal N improved performance compared with a rapidly degraded form such as urea (Meggison et al 1979).

Forty *Bos indicus* crossbred steers were randomly allocated to one of 10 pens with two replicates of five treatments. The treatments were, no supplement (NP); 30 g N as urea (US); 30 g N as IBDU (IBDU); US plus 35 g N as protected protein (US+PP) and IBDU plus 35 g N as protected protein (IBDU+PP). The basal diet consisted of minerals plus chaffed native pasture hay (predominantly *Heteropogon contortus*) containing 0.4% N. The protected protein was a mixture of formaldehyde cottonseed meal, fish meal and meat and bone meal (8:1:1). The animals were fed daily during a 56 day feeding period.

TABLE 1 Mean liveweight change and mean dry matter intake for steers fed various nitrogen supplements in pens for 56 days

	Treatment					SEM
	NP	US	IBDU	US+PP	IBDU+PP	
Initial live weight (kg)	173.5	172.0	174.6	174.4	173.6	1.5
Liveweight change (kg/d)	-0.21a+	-0.12a	-0.07a	0.26b	0.23b	0.08
Dry matter intake (kg/d)						
Roughage	3.24a	3.54ac	3.88ac	4.67b	4.08bc	0.20
Total	3.26a	3.65ac	4.01cd	5.22b	4.66bd	0.20

+ Means with dissimilar scripts are significantly different ( $P < 0.05$ )

Although the cattle offered IBDU lost less weight than either NP or US the differences were not significant ( $P > 0.05$ ). There was a significant response to protected protein when offered with either NPN supplement. Both NPN sources gave a similar response when fed with the PP supplement. The responses in live weight were related to an increase in roughage intake and an additional supply of nutrients from the protected protein.

These results failed to demonstrate a liveweight response to either urea or IBDU when fed alone. However, when fed with a PP supplement both NPN sources were equally effective. No apparent response was observed which could be related to a slower release of N from IBDU and any potential advantage of IBDU as an NPN of lower toxicity will only be apparent with less frequent feeding.

MEGGISON, P.A., McMeniman, N.P. and Armstrong, D.G. (1979). *Proc. Nutr. Soc.* 38: 147A.

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