

EFFECT OF GRAIN TYPE ON THE ABILITY OF UREA/AMMONIUM SULFATE TO RESTRICT GRAIN INTAKE

G. M. HOUGH, G. J. SAWYER, F. COUPAR, J. E. BAKER and R. J. MORRIS

W.A. Dept of Agriculture, P.O. Box 1231, Bunbury, W.A. 6230.

One obstacle to the general adoption of grain supplementation of dairy heifers and steers in W.A. has been the lack of a low labour, cost effective method of supplying a limited amount of grain daily. Barker *et al.* (1987) reported that the intake of cereal grain when offered *ad libitum* to beef cattle can be successfully regulated by varying the amount of non-protein nitrogen compounds added to it. For practical reasons grain offered to dairy heifers or steers is likely to be the same as that offered to the lactating herd and ranges from barley to lupin grain. This experiment quantified the effects of adding urea/ammonium sulfate (U/AS) to different grains on the intake and performance of dairy steers.

Fifty-four steers weighing about 130 kg were penned individually and allocated to 1 of the following treatments: supplements of milled barley, barley + lupin (1: 1) or lupin grain containing either 4% urea/0.5% ammonium sulfate (L) or 6% urea/1% ammonium sulfate (H). Supplements and pasture hay (8.2 MJ/kg DM, 12.9% CP) were offered *ad libitum* for 98 days and intakes were recorded twice weekly.

Supplement and hay intakes were similar across grain types (see Table 1). Despite the high crude protein content of the total ration consumed by steers offered lupin supplements (up to 29.6% CP) there were no adverse effects on production. Steers offered the lupin supplements had better feed conversion efficiencies (FCE). Supplement intake was restricted by increasing the amount of U/AS, however average intakes were 14–56% greater than predicted from previous studies with beef cattle and may have been due to breed and/or previous management.

Table 1. The effect of grain type on intake (g DM/day.kg LW), liveweight gain (kg/day) and feed conversion ratio (kg DM/kg gain) of steers

L, 4% urea/0.5% ammonium sulfate; H, 6% urea/1.0% ammonium sulfate; G, grain; A, additive
Interactions were not significant

	Barley		Barley + lupin		Lupin		s.e.d (n = 9)	Significance	
	L	H	L	H	L	H		G	A
Supplement intake	17	14	17	15	15	13	1.2	n.s.	***
Hay intake	10	13	9	12	11	12	1.0	n.s.	***
Total intake	28	27	26	27	26	25	0.7	**	n.s.
Liveweight gain	0.82	0.72	0.88	0.72	0.91	0.81	0.052	n.s.	***
Feed conversion ratio	6.2	6.8	5.5	6.7	5.5	5.7	0.31	***	***
** $P < 0.01$; *** $P < 0.001$; n.s., not significant.									

The amount of additive required to restrict intake is similar for different grain types. Due to the higher FCE of lupin supplements, however, more additive is required to restrict the intake of lupin grain to achieve a given liveweight.

BARKER, D. J., MAY, I? J., JONES, W. M. and MILLIGAN, J. W. (1987). Urea as a limiter in cattle diets. Final Report to W.A. Cattle Industry Compensation Research Fund. W.A. Dept Agric.