

## EFFECTS OF SUPPLEMENTS ON INTAKE, GROWTH AND BACTERIAL PROTEIN SYNTHESIS IN CATTLE EATING NaOH-TREATED STRAW

J.C. SPRAGG\*, R.C. KELLAWAY\* and JANE LEIBHOLZ\*

In a comparison of supplements fed to cattle eating NaOH-treated straw, liveweight gain and straw intake were similar when heifers were fed cotton-seed meal (C) or cracked barley (Spragg et al. 1982). This paper summarizes responses in two subsequent experiments in which effects of C and rolled barley (B) supplements on intake, growth rate and digesta flows were measured in cattle eating NaOH-treated straw.

Oat straw was sprayed with NaOH solution (44 g NaOH in 113 g H<sub>2</sub>O/kg) followed by a mineral solution supplying (g/kg) 79 H<sub>2</sub>O, 14 N, 1 S, 1.5 P and (mg/kg) 4 Cu, 0.1 Co and sprinkled with hydrated lime supplying (g/kg) 2 Ca. The treated straw was fed ad lib. to heifers receiving no supplement (O) or supplemented with 700 g/d of B or C. These diets were fed in Expt 1 to 33 Friesian heifers (210 kg live weight) and in Expt 2 to six Hereford heifers (200 kg live weight) fitted with rumen and abomasal cannulas.

TABLE 1 Dry matter intake (DMI) of treated straw, liveweight gain (LWG), nitrogen leaving stomach (N flow) and bacterial N synthesized/kg organic matter apparently digested in stomach (BactN/OMAD) in heifers fed supplements with a basal diet of NaOH-treated oat straw

Supplement	Experiment 1		Experiment 2		
	DMI (g/d)	LWG (g/d)	DMI (g/d)	N flow (g/d)	BactN/OMAD (g/kg)
O	6403	679 <sup>a</sup>	5459	104.8 <sup>a</sup>	31 <sup>a</sup>
B	6342	838 <sup>b</sup>	5113	103.2 <sup>a</sup>	29 <sup>a</sup>
C	6320	1051 <sup>c</sup>	5321	135.9 <sup>b</sup>	37 <sup>b</sup>
SEM	226.2	33.2	136.0	2.91	0.9

Values with different superscripts differ significantly ( $P < 0.05$ ).

No significant differences in straw intake were recorded in either experiment. Heifers on treatment C had significantly higher liveweight gains than those on treatment B which were significantly greater than those on treatment O ( $P < 0.05$ ). Similarly, N leaving the stomach and efficiency of microbial protein synthesis were significantly greater for heifers on treatment C than on treatments O and B.

The greater quantity of N leaving the stomach on treatment C was attributed half to the greater efficiency of microbial protein synthesis and half to undegraded dietary protein.

As metabolizable energy intakes would have been similar on treatments B and C, the higher liveweight gain of animals on treatment C may be attributable to a higher proportion of nutrients absorbed as amino acids.

SPRAGG, J.C., KELLAWAY, R.C. and KEMPTON, T.J. (1982). *Proc. Aust. Soc. Anim. Prod.* 14: 679.

\*Dept of Animal Husbandry, University of Sydney, Camden, N.S.W. 2570.