

A CONTROLLED-RELEASE DEVICE FOR DIGESTA FLOW STUDIES IN GRAZING CATTLE

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Digesta flow rate in grazing ruminants can be estimated using the dilution of inert markers continuously infused into the rumen by portable peristaltic pump (Corbett and Pickering 1983). Controlled-release devices (CRD), offer an alternative means of marker administration and have been used to estimate faecal output (Ellis et al. 1981). The use of CRD in digesta flow studies is reported here.

Eight Hereford steers, with rumen and abomasal cannulae, grazed either barley stubble or pasture in S.A. during January 1983 and received either (a) nil supplement (b) *Vicia faba* grain (c) barley grain or (d) barley grain plus isobutylidene diurea (IBDU) supplement. The CRD, containing CrEDTA and Ytterbium nitrate, were suspended in the rumen for eight days. Capsule plunger travel was measured at regular intervals and marker density in the core assayed. Samples of abomasal digesta and faeces were taken on days 6, 7 and 8 for estimation of non-ammonia nitrogen flow (NAN g/d) and nitrogen intake (NI g/d).

Plunger travel rate was similar for all CRD ($\pm 8\%$), and within each capsule was linear with time ($r^2 > 0.98$). The coefficient of variation of marker release was 14%, but this probably overestimates the variation in actual release because it includes error of analysis and measurement. Other errors of digesta flow estimation in the field are of greater importance (Corbett and Pickering 1983).

TABLE 1 Nitrogen intake and abomasal flow of non-ammonia nitrogen

Supplement	Pasture (N=2.1%)		Stubble (N=0.9%)	
	NI	NAN	NI	NAN
Nil	79	91	25	61
V. faba (600 g/d)	100	129	45	107
Barley (600 g/d)	90	160	29	123
Barley + IBDU (600 + 52 g/d)	109	- -	45	67

The NAN flow data for pasture are consistent with those obtained under similar grazing conditions by Siebert and Allden (1979) using marker infusion pumps. The apparent overestimation of NAN flow of the stubble + barley steer may be a reflection of rare-earth behaviour on coarse roughage (Egan et al, 1983).

It is concluded that the CRD can be used to estimate digesta flow and nutrient supply in grazing animals. The 'easy-care' nature of the devices will allow large numbers of animals to be monitored.

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