

Fecal N excretion as an approach to estimate forage intake by sheep and cattle

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This study was carried out to evaluate the reliability of using faecal N as a predictor of organic matter (OM) intake by sheep and cattle fed a natural pasture hay. The hay was produced from two areas of natural grassland pastures of Southern Brazil by cutting the sward 5 cm above the ground, and contained on average 0.93 of OM, 12.6 g kg⁻¹ of N and 775 g kg⁻¹ of neutral detergent fibre (dry matter (DM) basis). Two digestibility trials were conducted with male sheep (25±6 kg mean body weight (BW)) housed in metabolism cages and two digestibility trials were conducted with steers (180±23 kg mean BW) housed in individual pens. Two trials with sheep and one trial with cattle were conducted as a replicated 3 × 3 Latin Square (n=18) whereas one additional trial with cattle was conducted in a simple 3 × 3 Latin Square (n=6) design. In all trials the animals were fed only with hay offered in either amount 15 or 20 g DM kg⁻¹ BW, or *ad libitum*, which constituted the experimental treatments in each trial. The experimental periods vary from 15 to 21 days, including 10 to 14 days for adaptation and 5 to 7 days for data and sample collection. In all trials total feed offered and leftovers, as well as total feces were measured and sampled daily throughout the collection periods. Data were analyzed using a variance-covariance model where the animal specie was included as the class fixed effect. No effect of specie was observed for any variable. The actual OM intake varied from 3.8 to 27.0 g day⁻¹.kg BW and the excretion of fecal N varied from 0.04 to 0.21 g day⁻¹.kg BW. The apparent OM digestibility was on average 0.44±0.09 and was not affected by the level of forage intake. The OM intake (y, g kg⁻¹ BW) was linearly related to the amount of N excreted in feces (x, g kg⁻¹ BW) which linear equation was: $y=1.10 + 101.2x$, $R^2=0.83$, $P<0.05$. In conclusion, the OM intake by sheep or cattle grazing a natural grassland in Southern Brazil might be estimated based on the amount of N excreted in feces.

Key words: fecal nitrogen, methodology, natural grasslands, organic matter intake, ruminants