

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

PRECISION, ACCURACY, AND ROBUSTNESS OF DRY MATTER DIGESTIBILITY ESTIMATES OBTAINED BY MARKERS IN SHEEP

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In animal nutrition, the intake and digestibility of dry matter (DM) are factors of great relevance, since these data allow for defining the ideal amount of nutrients needed to meet the animal requirements. Of all approaches available to evaluate the *in vitro* DM digestibility, a noteworthy example is the indirect evaluation method, where estimates are obtained with the use of internal and external markers. The objective of this study was to evaluate the accuracy and precision of apparent DM digestibility estimates obtained with the use of internal and external markers in sheep fed diets containing sugarcane-top hay treated or untreated with calcium oxide and analyze the robustness of these markers with respect to variations in the DM intake and average live weight (LW) of the animals. Twenty uncastrated crossbred (undefined breed × Santa Inês) sheep with an average live weight of 29.64 ± 5.53 kg, at approximately 12 months of age, were used in a randomized-block design based on live weight. Estimates of total fecal DM production and digestibility of DM and nutrients were obtained by the total feces collection method using internal markers, represented by the indigestible components iDM, iNDF, and iADF and the external marker titanium dioxide (TiO₂). Markers represented the treatments and animals represented the blocks. The markers' accuracy was evaluated based on the mean bias, which is the difference between the value predicted by the marker and the value observed with total feces collection. Precision was evaluated by the root mean square error. Robustness analysis was undertaken for each marker by regressing the bias as a function of the variables DMI and average LW. TiO₂ showed a fecal recovery rate (FRR) lower than 100%, whereas the internal markers iDM, iNDF, and iADF had a FRR higher than 100%. There was a difference for the mean biases ($P > 0.05$), which suggests the existence of differences between the markers regarding their accuracy for estimating fecal production and consequently different estimates of apparent DM digestibility. The internal markers iDM, iNDF, and iADF are recommended for estimating total fecal DM production and DM digestibility, since the results obtained with them are not influenced by the DMI and LW of the animal.

Keywords: Ovine, Precision, Robustness analysis, Total feces collection

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