

Predicting feed intake in small ruminants – How to do in practice?

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Feed efficiency is a trait whose selection meets both economic and agri-environmental challenges. The objective of farmers is to breed animals that consume less feed while maintaining their production level. Genetic selection of efficient animals is possible but requires the recording of individual feed intakes by means of automatic feeders, which remain very expensive devices. Most of the breed cannot afford to invest in these automates. The identification of proxies for feed intake is therefore a challenge we have to overcome in order to enable breeding companies to include feed efficiency in their breeding objectives. The proxies we proposed to consider in the SMARTER project are to be easily and non-invasively sampled and analysed at a reasonable cost. Among these proxies, we will first try to benefit from already recorded traits such as body weights and average daily gains. We will also focus on biological markers that can be measured in fluids that breeders are used to sample: blood and faeces. From blood, we will get genotypes and metabolites (either through specific determination or through NMR spectra). From faeces, we will get NIRS spectra that will be analysed in comparison with NIRS spectra obtained from the food itself. All these proxies can be considered separately to predict feed intake but also combined with data integration methods to benefit from all these proxies. For research purpose, additional proxies such as ruminal data (microbiota, volatil fatty acids...) will be considered because of their direct link with feed efficiency, but it is currently difficult to include them in the proposed proxies to sample routinely.



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