International collaboration for multinational evaluations in sheep

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The global sheep industry is under pressure to improve sustainability from producers, retailers, governments, and society. This common goal is an opportunity for increasing collaboration between genetics research groups and service providers around the world. As part of the Brian Wickham Young Person Exchange Program, Michael Aldridge investigated how to facilitate joint international genetic evaluations for methane and feed intake, with visits to the following countries: Australia, New Zealand, Uruguay, the United Kingdom, Republic of Ireland, Norway, and France. This paper focuses on the higher-level recommendations for collaboration.

Trait definitions of methane emissions and feed intake between countries are inconsistent, either due to modelling or reporting requirements. The ICAR wiki should provide guidelines and reasoning for those different trait definitions. Each organisation uses different processing steps and data formats. All organisations store the raw measurements, intermediary calculations, final phenotype, and meta data, however a standard protocol on how to store that data and guidelines on what to keep and share are essential to future international evaluations. The longer it takes to develop a common data sharing solution, the larger the roadblock will become. Within each country, methane emissions, feed intake, and individual animal data (phenotypes, pedigree, genotypes) is owned by multiple organisations. In principle, if it can be demonstrated that data sharing is beneficial for the local country's genetic evaluation, permission or licencing can be obtained. Getting permissions after projects are completed becomes difficult as policies change, important personnel relocate, and priorities shift to new projects. Ideally, when new projects for methane and feed intake are developed, a pipeline for international data sharing should be included in the proposal. The largest scientific challenge is the relatively low genetic linkage between countries. The flow of genetic material is often one directional. A framework is needed to help increase linkage. This could begin with convincing industry bodies to allow for a certain number of international sires to be represented in research and reference flocks.

The current global projects for methane emissions and feed intake are the best opportunity for increasing collaboration and developing a full international genetic evaluation. If done well, it could establish a precedent for other traits.