



14. Resilience and Efficiency in Small Ruminants

Title presentation

Selection tools to benefit from international cooperation in small ruminants: a comprehensive work package of the SMARTER project

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Abstract

SMARTER (SMALL RuminanT breeding for Efficiency and Resilience) is an H2020 EU multi-actor project, whose global objective is to develop novel and collaborative strategies to improve resilience and efficiency of the sheep and goat sectors at the animal, population/breed and system/farm levels. A dedicated work package (WP6) aims to contribute to fastener genetic progress for resilience and efficiency (R&E) through international harmonization and cooperation in order to implement genomic selection across countries. The goal of this paper is to present the different tasks that are being undertaken to successfully meet the WP6 goals.

SMARTER will produce recommendations on the phenotyping of R&E related traits, which will enrich the ICAR guidelines in the area of small ruminants. SMARTER will also build 3 prototypes (meat and dairy sheep, dairy goat) of across-country genetic and genomic evaluations. The activities under development will result in the tools to enable a future routine international evaluation whose business and practical operation model will be established during the project. In this context, a visit to the Interbull Center in 2019 was a first step to define the desired model. SMARTER has already proposed and implemented several tools towards the development of across-country genomic evaluations. For instance, the file formats to exchange pedigree, phenotype and genotype, have been established based on Interbull and Interbeef experiences. An international codification of the sheep and goat breeds has been initiated and is expected to be consolidated by ICAR. The current breeding programs and genetic evaluation systems have been described, based on a survey distributed to all the partners. A comparison of sheep genotype metrics across breeds and countries should lead to a common genotype platform suitable to all SMARTER populations. Data sharing agreements have been signed between partners to pool large set of historical datasets. Furthermore, a first algorithm to estimate the long-term benefits and feasibility of international genetic and genomic evaluations has been evaluated. The assessment of the long-term benefit of international evaluation is crucial to make countries endorse the harmonization of their methods of phenotyping and evaluation and accept to pool together data from different countries.