

ORAL

Technical Session 7

Milk Recording in a Technology World: Providing Value Added Services and Data Exchange solutions for Farms with Robots and Sensors

Assessing the adoption of genomic tools in sheep and goat breeding: patterns, challenges, and perspectives

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Genomic selection has become the reference approach for genetic improvement in many livestock species and is now the standard in dairy and beef cattle breeding, increasing accuracy, shortening generation intervals, and accelerating genetic gain. In small ruminants, adoption remains more heterogeneous. Some breeds, although implemented later than in cattle, have implemented structured genomic selection programs, whereas in others, delays reflect the need to build basic breeding infrastructure, including pedigree and performance recording, and organized breeding nuclei, before genomics can be applied. To capture this diversity, a questionnaire survey conducted by the ICAR Sheep, Goats, and Camelids WG was sent to experts from countries with sheep and goat populations.

Responses were received from 13 experts representing 26 breeds across eight European countries. The survey described the current state of genomic implementation across breeds and countries and identified common patterns of operational strategies. Information was collected on population size, recorded traits, pedigree systems, breeding nuclei organization, and genomic applications, including parentage verification, major gene use, genomic evaluation methods, and genetic diversity indices. Results provided a comprehensive overview of diverse breeding contexts and practical realities, allowing breeds and countries to be grouped into three levels of genomic implementation: 1) structured and fully operational schemes, in which genomic tools are routinely applied, mainly involving breeds from countries with well-established breeding schemes (10 breeds, 3 countries); 2) advanced design schemes, characterized by clearly defined genomic strategies that still require refinements in coordination and operational logistics, including both breeds facing organizational constraints and small local populations (5 breeds, 3 countries); and 3) embryonic schemes, marked by sporadic and non-systematic genomic activities, typically associated with poorly structured breeding programs and limited recording systems (14 breeds, 6 countries).

The results support the establishment of a Reference Centre to promote experience and methodology exchange, helping less-structured programs overcome gaps and integrating selection indices that, alongside production traits, also consider the adaptive potential of local breeds.