POSTER

Technical Session 7

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

Genomic reconstruction of pedigree records: a key step in the revitalization of the critically endangered Istrian goat

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This study addressed the challenges of maintaining accurate genealogical records in the critically endangered Istrian goat, an indigenous breed primarily managed under low-input extensive to semi-extensive systems. In such environments, traditional field data recording is frequently compromised, which threatens to undermine the revitalization efforts essential for this population. To rectify this, genomic tools were employed to validate and reconstruct the pedigree, providing a robust framework for managing genetic diversity and conservation. Genotyping was performed using a medium-density 60K SNP chip for 214 individuals.

The pedigree was analyzed and corrected using the SeekParentsF90 software. A 1.0% Mendelian conflict threshold was applied to exclude incorrect parental assignments.

Among the 184 tested parent-offspring pairs, the analysis revealed substantial inaccuracies in the official herdbook, with paternity and maternity error rates of 11.3% (6/53) and 18.3% (24/131), respectively. By leveraging genomic information and applying a rigorous 0.5% assignment threshold, the study successfully identified and assigned 4 previously unrecorded or misidentified biological sires and 13 dams. These findings support the hypothesis that extensive rearing conditions carry a high risk of parental misidentification during the kidding season, despite breeder efforts. The integration of genomic corrections significantly improves the reliability of the herdbook, providing a solid basis for the precise estimation of genetic parameters and the implementation of effective mating schemes. Ultimately, this research confirms that genomic-based pedigree validation is not merely an auxiliary tool, but a fundamental requirement for the sustainable conservation and genetic management of the Istrian goat.