Potential of precision livestock farming in small ruminant farming systems

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The benefit of precision livestock farming (PLF) is well recognised in the more intensive livestock sectors, such as dairy, pig and poultry. However, PLF has not been applied as widely in species where animals are considered to have a lower individual value or with less economic interest, as is the case in small ruminants (SR), or in extensive management systems. This is despite the very significant production, welfare, and labour efficiency advantages that can be achieved by applying PLF in these contexts. Despite their crucial role for the rural economy, society, and environment and their importance in ecosystem services such as biodiversity and maintaining cultural heritage, SR systems face issues such as challenging climatic and topographical conditions, lack of labour and low profitability that could be alleviated by introducing PLF technologies. Research on PLF for SR systems has been recently emerging, but perhaps lacks a joint up approach. This paper present an overview of current research and potential for future applications in several countries of PLF for SR systems on various themes, highlighting the wealth of potentially available solutions and prototypes. The topics presented cover feed and water intake, health, disease and parasite control and monitoring, fertility and reproduction management, grazing and predation control, animal locations and management monitoring, lambing and mismothering issues, as well as lactation monitoring. Issues relating to acceptability, economic relevance, technology readiness level (TRL) and industry engagement will also be discussed.