TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

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The WoW: an integrated platform, an algorithm and a web app for the automatic monitoring of individual live weight sheep farming systems

Liveweight (LW) is a conventional measure for monitoring body condition and for herd management. We conceived an automated weighing prototype for small ruminants using the concept of self-weighing (Walk-over-Weighing, WoW), combined with individual radio frequency identification (RFID). Our results show the feasibility of recording LW with free and voluntary individual passages with a controlled flow on the platform. After 2 to 3 weeks of adaptation, 100% of animals cross daily. Some factors related to behavior (e.g. speed of passage) and the gregarious instinct of sheep affect the quantity of observations and cause a relatively high number of outliers, which limits adoption by farmers. Its use, in an automated and non-invasive way, would therefore involve filtering the primary, raw databases generated by the WoW. We therefore developed an algorithm to remove outliers and keep the right values, allowing the correct interpretation of daily, individual LWs (so-called kfino; https://arxiv.org/abs/2208.00961), for the automatic detection of those outliers. Then, the ORIOLE web application was developed (https://oriole.sk8.inrae.fr/) with the Shiny library of the R software. ORIOLE allows users to import, detect and filter outliers for an accurate and automatic LW prediction of each individual sheep at any time. The use of WoW can help to save labor and time while providing timely information to improve productivity and animal welfare in a variety of farming systems conditions.

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