How to set the stage to ‘’Tag ’n’ Track”?

No 16

Tuesday, 1st August - 15:30: Poster presentations in oral format (Bolero hall) - Poster

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Passive RFID (Radio Frequency Identification) has the potential to advance research on poultry behaviour, as it allows automated, individualised, longitudinal and non-invasive monitoring. These features are only sometimes possible with traditional approaches to monitor animal behaviour. However, there are no guidelines for implementing and reporting on RFID in poultry research. Therefore, we set out to identify the insufficiencies and inconsistencies resulting from such a lack of guidelines that can be noted in reports on the validity and technical aspects of this technology deployed for tracking purposes, and to suggest a roadmap to address them. To this end, we systematically searched the relevant literature on 19.11.2022 in Scopus and Web-of-Science. The search query was built as follows: Topic = (RFID OR “radio frequency identification”) AND (poultry OR chick* OR bird OR hen OR broiler); “All Fields” was considered. After a screening process, 74 relevant papers were selected. They describe and/or report on the performance of 23 different RFID systems. The evaluation of this body of literature reveals three bottlenecks. Firstly, the main technical aspects, such as operating parameters, infrastructure, architecture and results of optimisation tests for 6 of these systems, were not provided. Secondly, the validation study, which should include measuring performance indicators such as reliability, accuracy, validity, precision, sensitivity, concordance and/or agreement, was not mentioned for 10 identified systems. Finally, some inconsistencies were found across the papers. For example, several authors used similar formulas to estimate the difference between the RFID system and the adopted gold standard; however, they referred to the results in diverse ways: “time discrepancies”, “time differences”, “average differences, ”identification speed“, ”delayed RFID detection time, or “accuracy”. These inconsistencies can be confusing. To overcome these bottlenecks, we propose a six-step roadmap that explains how to (1) define the tracking objectives and (2) analyse the tracking requirements and conditions, (3) conceptualise the RFID system, (4) deploy the system, (5) validate the system and (6) report on the validity and technical aspects of a deployed RFID system. The proposed roadmap and reporting standard are intended to serve as a reference for animal behaviour scientists, RFID system integrators and equipment manufacturers on selecting the right RFID equipment and installing and validating a system for poultry behaviour monitoring.

Human-Animal Interactions (Ruminants)