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## **Transects: A new approach for on-farm broiler welfare assessment**

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Animal welfare has wide-ranging implications for animal production in the global market, as it plays an important role granting its competitiveness and sustainability. Increasing number of countries has specific farm animal welfare legislation, although its verification is difficult due in part to complexity of assessment protocols. Here we present practical feasibility of a new transect approach tested on broiler production that may permit a more efficient on-farm welfare assessment. The line transect approach is based on methodology widely used in wildlife studies and it is close to farmers routine. The transects for welfare assessment consists of set walks divided in randomly ordered transects covering full area of the house. Walk through the house is a standard procedure for broiler daily care, which facilitates the understanding of the methodology for anyone with minimal broiler care experience. We assessed six identically managed commercial houses of similar dimensions, located in Northern Spain, with flock size ranging from 13,220 to 27,540. A total of 5 transects were conducted per house. Our results indicated that validated welfare indicators for broilers such as: incidence of immobile, limping, dirty, sick, agonizing or dead birds can be detected by line transect methodology without disturbing the birds. Sensitivity of line transects for welfare assessment permitted detection of small variations (below 0.1%) in the incidence of the selected welfare indicators across houses ( $p < 0.0001$  to  $0.0156$ ), while inter-observer reliability remained consistent. The effect of observer was only detected for the incidence of immobile birds ( $0.18\% \pm 0.02$  vs.  $0.22\% \pm 0.03$ ), and for the interaction of observer with farm for the number of dirty birds, where maximum range of variation across farms and observers for dirty birds was of  $\pm 0.5\%$ . In addition, bootstrapping analysis indicated that house assessment was stable, independently of the chosen number or transects locations. Our initial results suggest the suitability of this approach for practical on-farm broiler welfare assessment with potential for application to other poultry species, especially those that are difficult to handle such as turkeys. However, further investigations should be conducted to determine the validity of this methodology as compared with the more classical sampling approach.