Technological tools for respiratory health status detection in pig farming: comparison with veterinary records

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**Abstract.** Respiratory diseases have an important economic impact in intensive pig farming. Swine herds affected by respiratory disorders present increased mortality rate, reduced performance, lower carcass quality and increased use of antimicrobials. Therefore, the early diagnosis and early recognition of symptoms are fundamental to reduce transmission and the need and use of medications. Commonly, cough is the most frequent symptom. To observe it, continuous animal observation is crucial, but requires substantial dedicated manpower that is often not available in intensive farming. Precision Livestock Farming (PLF) could help farmers providing relevant information related to animal status and their environment in an easy and quick manner. For coughs, the technology to be adopted is the recording of sounds and vocalizations through microphones, which have the advantage of recording data on many animals with just one instrument and of being noninvasive, thus without causing stress and affecting animals’ normal behavior.

In this context, a commercial product by Soundtalks® was studied with the aim of comparing the warnings of this instrument against the observations of the veterinary and finally evaluate its reliability. This microphone detects automatically sounds, processes data and results the respiratory health status of pigs through a Respiratory Health Status (ReHS) indicator. A user-friendly interface based on colors is available: when yellow and red colors are shown, “Potential Respiratory Health Problems” or “High Risk of Respiratory Health Problems” occur and require veterinary attention. This tool was installed in a commercial fattening pig house in Brescia province, where a gateway that records data and sends them on the cloud, and two microphones in two rooms of about 320 pigs each of the same building were installed. The monitoring lasted 9 months (2 fattening cycles). In total, 13 ReHS yellow alerts and 8 red alerts occurred. In 2% of the cases no medication was used before the alert was given, similarly in 2% of the cases medication was already used. This instrument has a high potential in pig farming, as its use on farms can support the vet in defining when farms need to be visited.