EARLY DETECTION OF CLINICAL RESPIRATORY DISEASE IN GROWING PIGS USING CONTINUOUS SOUND MONITORING AND AN ALGORITHM-BASED RESPIRATORY DISTRESS INDEX

D. Polson 1, S. Playter 1, D. Berckmans 2, A. Stoffel 2, B. Quinn 3.

1 Boehringer Ingelheim Animal Health, Ames, Iowa, United States; 2 SoundTalks NV, Leuven, Belgium; 3 Boehringer Ingelheim Animal Health, Ingelheim, Germany.

Introduction

Early detection of clinical respiratory disease in growing pigs can improve productivity and profitability by enabling earlier more effective treatment. Clinical disease detection is typically the direct responsibility of farm workers, and is a function of skill, experience and time spent in the farm. However, detection of clinical disease onset by workers across multiple farms and systems can be problematic due to variation in the aforementioned capabilities of personnel. Continuous sound monitoring systems hold the potential to detect the onset of clinical respiratory disease earlier with greater consistency and reliability. The purpose of this project was to evaluate the ability of a continuous sound monitoring system to reliably detect the onset and directionality of clinical respiratory disease of growing pigs under large-scale commercial production conditions.

Materials and Methods

Cough monitors (SOMO+ Respiratory Distress Monitor, SoundTalks NV, Leuven, Belgium) were obtained and installed in three large commercial wean-to-finish facilities designed to house 1200 to 2400 pigs per airspace. Three different farm sites / systems were enrolled in the project. Pigs were placed into facilities per normal practice. An algorithm-based respiratory distress index (RDI) was continuously generated from recorded sound files and uploaded to a cloud database. RDI's were continuously monitored and alerts were automatically sent to pre-determined personnel when a significant rise in RDI was detected by the system. When an RDI alert was generated, diagnostic samples were collected and tested by PCR for PRRS, IAV-S, *Mycoplasma hyopneumoniae*, PCV2 and parainfluenza.

Results

RDI episodes were detected across the three farm sites, including: IAV-S (H1N1), IAV-S (H3N2), and

Mycoplasma hyopneumoniae. Differences in patterns of cough were observed between IAV-S and

Mycoplasma hyopneumoniae.

Discussion and Conclusions

The detection of the respiratory disease episodes by the SOMO+ Respiratory Disease Monitor

ranged from an estimated 2-5 days earlier than detection by farm personnel.