2024 Allen D. Leman Swine Conference Research Abstracts and Proceedings

September 21-24, 2024

Saint Paul, Minnesota, USA



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Organized by: The University of Minnesota College of Veterinary Medicine and University of Minnesota Extension

Evaluation of nasal swab and nasal wipe for detection of Influenza A in swine using Bayesian latent class analysis

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Influenza A virus (IAV) is an important pathogen in Brazilian swine herds, and monitoring the viral circulation is essential to control and reduce the transmission. For this reason, estimating the prevalence at the individual level of pigs is still crucial to assessing the level of infection in herds. Thus, two sample collection methodologies were compared in pig herds in southern Brazil to detect IAV by RT-qPCR: nasal swab (NS) and nasal wipe (NW). A Bayesian latent class model (BLCM) was set for two tests and two populations. The NS has, on average, higher sensitivity and specificity values than the NW method. The NW and NS used are more specific (higher than 95% for both) than sensitive. The sensitivity for NW was lower than the NS, 84.14% (70% – 95%) and 87.15% (73% – 97%), respectively, and the specificity was 95% (90% – 99%) and 99% (96% – 100%), respectively. This may occur since viral detection depends on the shedding period of the agent, and it is common for the NW to be affected by inhibition factors during RT-PCR. Although the wipe sample collection loses both sensitivity and specificity, compared with a swab, it is a valuable tool for IAV detection in pig herds, and the decision about the use of both techniques should be based on the trade-off between their performance limitations and feasibility in routine monitoring.