Season 6, Episode 3: **Manure Handling Connections Between PRRSV and PEDV**

Dr. Ana Paula Serafini Poeta Silva, Research Scientist, Iowa State University, shares findings from a study examining the link between manure pumping activities on swine farms and the risk of disease outbreaks, with a specific focus on PRRSV and PEDV.

Background

Manure handling is an essential part of swine production, but it may increase the risk of disease outbreaks. While biosecurity often emphasizes practices related to pig movement and farm personnel, manure pumping and application could contribute to the spread of viruses like Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) and Porcine Epidemic Diarrhea Virus (PEDV). Understanding how these practices relate to outbreaks can help producers make more informed decisions to reduce risk.

Study Design

This large-scale study evaluated data from nearly 2,600 pig groups across more than 600 Midwest sites between July 2020 and December 2022. Using a case control design, researchers compared sites that experienced PRRSV or PEDV outbreaks to those that remained negative. Data was collected on several aspects of manure activity, including whether manure was pumped on site, if nearby fields received manure, the application method used (drag hose or tanker truck), and the distance between fields receiving manure applications and pig sites. GPS coordinates were used to calculate proximity, and disease risk was assessed over the five weeks following each manure event.

Additional information such as pig type (nursery or finishing), ventilation system, prior disease history, and pig age at time of pumping was included to account for other risk factors. This approach allowed for a comprehensive evaluation of how specific manure-related variables impacted the likelihood of virus outbreaks.

Key Findings

The study found a strong association between manure handling and PRRSV outbreaks. Sites that pumped manure had 3.4 times higher odds of experiencing a PRRSV outbreak within five weeks than sites that did not. Farms located within one mile of a manure application field had four times higher odds of a PRRSV outbreak, and those within three miles had three times higher odds. No elevated risk was observed when manure was applied more than five miles away.

Pumping during the first four weeks after pig placement increased PRRSV outbreak risk nearly sixfold compared to pumping after 17 weeks. Sites with a previous outbreak were 3.5 times more likely to experience another following manure activity.

In contrast, manure handling was not significantly associated with PEDV outbreaks. This may reflect differences in virus transmission dynamics or lower PEDV detection rates in the study.

Practical Insights for Producers

Producers can reduce disease risk by adjusting the timing and location of manure activities. Delaying pumping until after the first month of pig placement significantly lowers the odds of a PRRSV outbreak. Producers should also take extra precautions on farms with recent PRRSV history and avoid applying manure within one to three miles of active pig sites, especially when using drag hose systems that move between sites without sanitation. Equipment sanitation and biosecure manure application protocols remain critical components of farm-level and regional disease prevention strategies.

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