Assessment of PRRSV Trailer Contamination at the Harvest Facility

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Key Points:

- **PRRSV can be detected on market hog trailers frequently.**
- **After leaving the harvest plant, PRRSV contaminated trailers are often not washed.**

Introduction

Porcine reproductive and respiratory syndrome (PRRS) is one of the most important swine diseases in the US. It is known that the contamination of transport vehicles represents a significant risk factor. As pigs move between farms and ultimately to the harvest plant, the role of transportation on disseminating pathogens can be substantial. Lowe et al. (2014) demonstrated the role of unloading at harvest facility in PEDV trailer contamination during the early stages of the epidemic; however, there is no data available quantifying the risk of contamination with PRRS while unloading market hogs at the plant. Therefore, determining the current risk of contaminating trailers at harvest facilities is critical for informing biosecurity measures aimed at mitigating, controlling, and ultimately eliminating pathogens from swine production systems. In this ongoing study, we evaluated how often trailers are contaminated with PRRSV while unloading market hogs at the harvest facility.

Methods

Fifteen environmental samples from harvest plant docks and market hog trailers (before- and after-unloading) are being collected biweekly since calendar week 47 of 2024. Metadata on trailer origin, sanitation practices, destination and driver/plant employee behavior during unloading is also being recorded. Environmental samples are being submitted to the University of Minnesota Veterinary Diagnostic Laboratory for PRRSV RT-PCR testing.

Results

As of this writing, 88,4% of the samples have been collected, yielding 344 samples from docks and trailers. At the dock, PRRSV was detected in 50.3% of the samples with a Ct value ranging between 25.10 and 39.72. Before unloading market hogs, PRRSV was detected in 34.3% of the trailers, and when tested right after unloading, the percentage of contaminated trailers increased to 43,4%. The increase in contaminated trailers was consistently observed across all tested weeks (Fig. 1). The mean, minimum, and maximum PRRSV RT-PCR Ct values after unloading market hogs were 34.1, 26,08, and 38,74, respectively. Of the 65.1% trailers that arrived PRRSV RT-PCR negative to the harvest plant, 25% were contaminated. Across seasons (Winter, Spring and Summer), the highest percentage of PRRSV samples was observed during the spring with the dock testing positive in 61.9% of the samples while 40.9% and 58.1% of the samples tested positive before and after unloading, respectively. In contrast, contamination was lower during the winter and summer: 40% and 32% for the docks, respectively; 27.7% and 31.5% for pre-unload, respectively; and 31.1% and 28.1% for post-unload, respectively (Fig 2). A total of 81,1% of the trailers would visit the truck wash right after unloading market hogs, while 18,7% did not plan to wash their trailer after unloading and 0.2% did not know what their next stops would be regarding trailer sanitation or visiting farms. Out of the PRRSV contaminated trailers, 13.3% planned to load market hogs without washing it.

Fig 1. Percentage of RT-PCR PRRVS positive samples per week

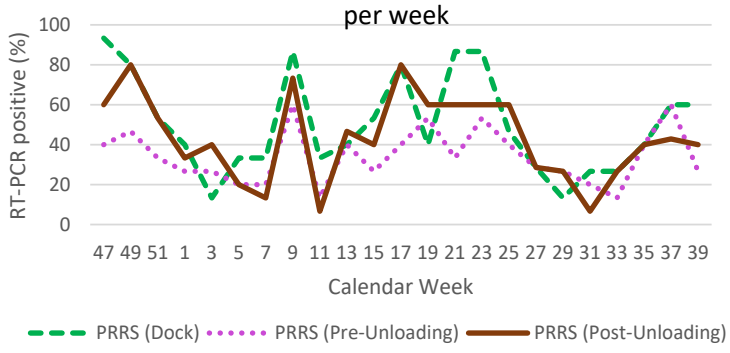
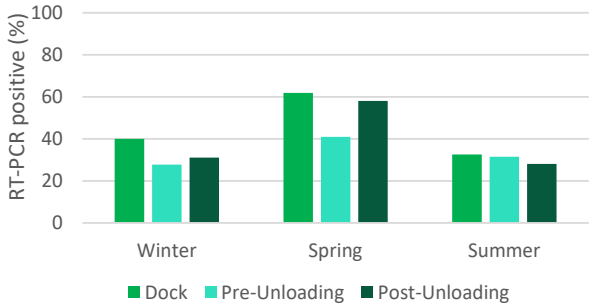


Fig 2. Percentage of RT-PCR PRRS positive samples by season



Discussion

Results from this study indicate that an important number of trailers are arriving at the harvest plant already contaminated, suggesting PRRSV within-herd transmission leading to market hog PRRSV shedding or the possibility that trailers had not been washed in between loads. The percentage of contaminated docks is usually higher than the percentage of contaminated trailers arriving at the plant (pre-unloading), and the percentage of contaminated trailers after unloading is similar to the percentage of contaminated docks, suggesting that trailer contamination most likely occurs during the unloading process. Seasonality seems to play a role on trailer contamination, with higher percentages of contaminated docks and trailers occurring during the spring when comparing with the winter and summer which was an unexpected given the historical national PRRS trends. These findings underscore the critical importance of implementing effective biosecurity measures during the unloading process and ensuring market hog trailers are washed after every load.

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