

Assessment of PEDV Trailer Contamination at the Harvest Facility

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Key Points:

- PEDV can be detected on market hog trailers throughout the year.
- After leaving the harvest plant, PEDV-contaminated trailers are often not washed.

Introduction

Porcine Epidemic Diarrhea Virus (PEDV) was first detected in the USA in 2013 and has been responsible for significant economic losses, resulting in diarrhea, vomiting, dehydration, and high pre-weaning mortality. Due to the high concentration of viral particles shed in feces, contamination of farm personnel clothing, footwear, materials, and transport vehicles represents a significant factor in viral dissemination. Lowe et al. (2014) demonstrated the role that unloading hogs at the harvest facility has on PEDV trailer contamination during the early stages of the epidemic; however, there is no information available on the current trailer contamination risk. In this study, we evaluated how often trailers are contaminated with PEDV during the unloading of market hogs at the harvest facility.

Methods

Fifteen environmental samples from harvest plant docks and market hog trailers (before- and after-unloading) were collected biweekly between calendar week 47 of 2024 and week 45 of 2025 (whole year). Metadata on trailer origin, sanitation practices, trailer destination, and driver/plant employee behavior during unloading were also recorded. Samples were submitted to the University of Minnesota Veterinary Diagnostic Laboratory for PEDV RT-PCR testing.

Results

A total of 389 samples were collected from both docks and trailers before and after unloading. At the dock, PEDV was detected in 62% of the samples with a Ct value ranging between 19.16 and 37.92. Before unloading market hogs, PEDV was detected in 27% of the trailers, and when tested immediately after unloading, the percentage of contaminated trailers increased to 51%. The increase in contaminated trailers were consistently observed across the majority of tested weeks (Fig. 1), with higher levels of contamination in fall and winter. The median, minimum, and maximum trailer PEDV RT-PCR Ct values after unloading market hogs were 34.14, 14.44, and 37.95, respectively. A total of 73% of the trailers arrived at the plant PEDV RT-PCR negative, and 36% arrived contaminated. Across all seasons, the highest percentage of dock positive PEDV samples were observed during fall (79%) followed by winter (70%). During fall and winter, a total of 36% and 30% of the trailers tested positive before unloading, respectively. After unloading, this percentage increased to 70% and 73%, respectively. In contrast, dock contamination was lower during spring and summer, as 50% and 35% of tested positive, respectively. Trailer contamination was also lower as 26% and 11% of the incoming trailers tested positive in spring and summer, respectively. On departure, 39% and 20% of the trailers tested positive, respectively (Fig 2). A total of 87% of the truck drivers reported that they would visit the truck wash right after unloading market hogs, while 13% did not plan to wash their trailer after unloading. Out of the PEDV-contaminated trailers, 15.2% of the personnel planned to load market hogs without washing the trailer.

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

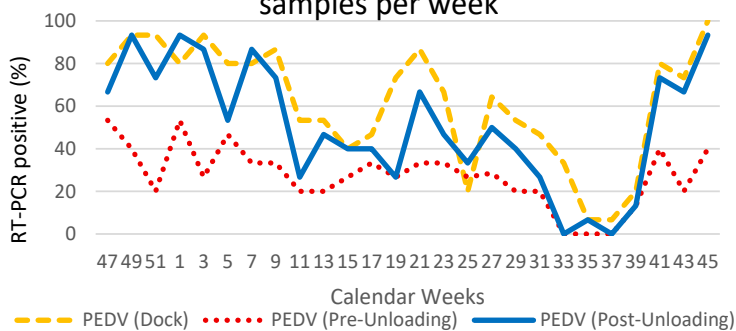
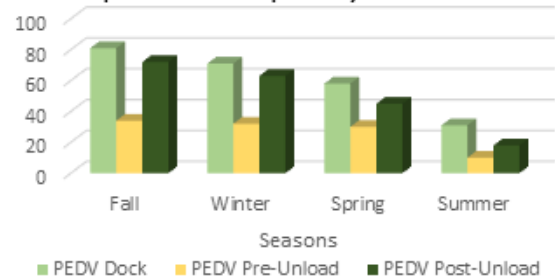


Fig 2. Percentage of RT-PCR PEDV positive samples by season



Discussion

Results from this study indicate that a concerning number of trailers are arriving at the harvest plant already contaminated, suggesting PEDV within-herd transmission may be occurring at the source herd or at trailers had not been properly sanitized between loads. The percentage of contaminated docks are usually higher than the percentage of contaminated trailers arriving at the plant (before unloading), but the percentage of contaminated trailers after unloading are usually similar to the percentage of contaminated docks, suggesting that trailer contamination might occur during the unloading process. Seasonality seems to play a role in trailer contamination, with higher percentages of contaminated docks and trailers occurring during fall and winter when compared to spring and summer. These findings underscore the critical importance of implementing effective transport biosecurity measures during the unloading process and ensuring market hog trailers are washed after every load.

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