

The Role of Harvest Plant Lairage and Transportation in Propagating the Initial Stages of an Outbreak of Porcine Epidemic Diarrhea Virus in the United States in 2013– Preliminary Results

The objective of the study were to assess the risk that collection points like harvest plants play in promoting the initial outbreak of a novel disease organism by estimating the rate of contamination of trailers with PEDV during the unloading process. Preliminary results have been obtained from environmental samples collected from 669 livestock trailers prior to and after unloading pigs into the lairage at seven harvest plants located in central US. Eighty-nine to 102 samples were collected over a 2-3 day period at each facility between 14 June and 20 June 2013. All samples were analyzed for the presence of PEDV DNA by a commercially available PCR test at the ISU VDL. Across all six harvest plants 17.3% (95% Confidence Interval 14.4, 20.3%) of the trailers were contaminated prior to unloading. Contamination rates ranged from 2.0% (0.0, 5.2%) to 69.7% (60.2, 79.2%) between plants. Of the trailers that were not contaminated at arrival, 11.4% (8.9, 13.8%) were contaminated during the unloading process. Plants with higher contamination rates at arrival tended to have higher rates of trailers that were contaminated during the unloading process ($R^2=0.98$). Across all plants, each contaminated trailer at arrival resulted in 0.96 additional trailers that were contaminated during the unloading process. These data suggest that harvest plants and similar livestock collection points serve as an effective method of contaminating fomites with PEDV and could play an important role in expanding the outbreak of PEDV in the US.

Diagnostic testing and supplies were funded by the NPB, NPPC, and the AASV.

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