

**Title:** Evaluation of Mortality Composting Parameters Necessary for Inactivation of PEDv –  
NPB #14-239

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### Scientific Abstract

A large body of research on virus persistence has been conducted to assess viability of the virus on vehicles, in feed and water, and on production building surface, little is known about the persistence in and effective disposal methods for PEDV-infected carcasses. This project was conducted to quantify the persistence of PEDV RNA via quantitative real-time reverse transcription polymerase chain reaction (qRT-PCR) at various time-temperature combinations and in infected piglet carcasses subjected to composting. Porcine Epidemic Diarrhea Virus was inoculated into cell culture media at  $1 \times 10^5$  TCID<sub>50</sub> per sample (1 mL sample size) at various time and temperature combinations including temperatures of 37, 45, 50, 55, 60, 65, 70 °C and exposure times of 0, 24, 48, 72, 96, 120, 168 and 336 hrs. At all temperatures, virus RNA copies declined over time and was most marked and rapid for 65 and 70 °C. Two of three samples had undetectable virus RNA after 336 hrs incubation at 70 °C. PEDV-infected piglet carcasses were subjected to two cycles of composting lasting 35 d and 30 d, respectively, for a total compost time of 65 d. The compost process was replicated in three windrow sections contained within constructed bins. Bins were designed with insulated walls to represent a continuous windrow compost pile. Material samples taken from ten locations within the pile representative of the pile cross-section had undetectable viral RNA following each cycle.

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These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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