**VVD-PP-43**

**TITLE**
ENVIRONMENTAL MONITORING OF ENTEROBACTERIACEAE CAN BE USED TO DETERMINE WEAKNESSES IN FEED MILL BIOSECURITY FOR PORCINE VIRUSES

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**CONTENT**
Weaknesses in feed mill biosecurity may serve as an entry point for porcine viruses into the swine feed supply and subsequently impact herd health. Enterobacteriaceae is commonly used as an indicator of facility hygiene in the human and pet food industries, but its use has thus far been limited in livestock feed mills. The objective of this experiment was to determine the association between Enterobacteriaceae prevalence and distribution with porcine deltacoronavirus (PDCoV) in a swine feed mill to determine its ability to identify biosecurity weaknesses. Initially, 375 samples comprising both environmental swabs from surfaces and feed samples were collected from 11 different United States swine feed mills. Samples were analyzed for Enterobacteriaceae using selective media. In response to a PDCoV outbreak at a sow farm, 1 of these 11 facilities was subsequently swabbed and samples analyzed for PDCoV. Samples were analyzed at Iowa State University Veterinary Diagnostic Laboratory for PDCoV via quantitative real-time polymerase chain reaction. Data were analyzed using the GLIMMIX and CORR procedures of SAS. The prevalence of PDCoV varied across the different surface types swabbed ($P = 0.026$), with non-animal food contact surfaces having greater ($P < 0.05$) contamination levels than animal food contact surfaces or in the feed sample. However, there were no differences detected in the Ct level across surfaces ($P = 0.301$). Enterobacteriaceae prevalence appears to be a strong indicator of PDCoV Ct; a higher proportion of Enterobacteriaceae-positive surfaces was associated with lower PDCoV Ct, which indicates a higher level of virus ($R = -0.631$). Additionally, Enterobacteriaceae prevalence is an indicator of PDCoV prevalence ($R = 0.456$) across surfaces. These results indicated that environmental monitoring of Enterobacteriaceae in feed manufacturing facilities may be used to determine weaknesses in biosecurity and potential for swine virus entry.