

PORK SAFETY

Title: Understanding ecology and distribution of Shiga toxin-producing *Escherichia coli* O157 and Non- O157 in US swine feed mills - **NPB 18-070**

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Date Submitted: 31st of August 2020

This study aimed to evaluate the patterns and potential risk factors associated with the occurrence of *Salmonella* spp. and *E. coli* in selected United States swine feed mills. A total of 405 samples were collected during fall 2018, spring and summer 2019 from selected sites including floors, equipment, shoes and feed in six feed mills in the US Midwest region. Each sample was analyzed for the presence of *Salmonella* and *Escherichia coli* with culture methods and confirmed by PCR and Whole Genome Sequencing (WGS). A survey regarding production volumes, hygiene practices and microbial testing capabilities was conducted in each facility. All mills had at least one sampling site positive for either *Salmonella* or *E. coli*. Of the 405 samples, 4.7%, and 14.1% were positive for *Salmonella* spp., and *E. coli*, respectively. Sites with higher percentages of positive samples were the receiving, manufacturing, and control area floors. The survey responses indicated that the age of the mill might be a risk factor for bacterial contamination: the older the facility, the higher the number of positive samples. Other risk factors evaluated, such as the production capacity, did not appear to relate to bacterial prevalence. The data documents the presence of *E. coli* and *Salmonella* in selected US swine feed mills, and an association between *E. coli* occurrence and number of ingredient suppliers to feed mill. This information could be used to understand risk factors affecting the occurrence of *Salmonella* spp. and *E. coli* in feed mills and help implement monitoring and mitigation strategies for public health.

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 This report has not been peer-reviewed.

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