

PORK SAFETY

Title From feed to meat: investigation of the prevalence and distribution of *Salmonella enterica* serotype I 4, [5], 12:1:- a pathogen of interest in pork-
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Scientific Abstract:

Salmonella is a pathogen of public health concern. Each year, *Salmonella* infections cost to the food industry approximately \$2.3 billion and 33% of the reported cases are associated with beef, poultry or pork. Pathogen presence in feed mills can represent one of the many potential routes for entry and transmission into the food production chain. Nevertheless, little is known about *Salmonella* incidence and association with these type of environments. The objective of this research was to investigate presence, distribution and seasonal prevalence of *Salmonella* spp., *Salmonella enterica* serovar Typhimurium (ST) and its monophasic variant 4,[5],12:i:- (STM) in different feed mills across the United States. Eleven facilities were selected in 8 states and 12 sites were sampled within each feed mill. Visits were conducted during fall 2016, early spring 2017 and summer 2017. Samples were analyzed following the FSIS guidelines for isolation and identification of *Salmonella*. Culture positive isolates were further examined by a PCR analysis targeting the *invA* gene to differentiate for *Salmonella enterica*. A multiplex real-time PCR was used to differentiate ST and STM from other serotypes. Associations between season, mill and sample site with *Salmonella* presence were investigated using generalized linear mixed effects models. Both season ($P < 0.007$) and mill ($P < 0.005$) were significantly associated with *Salmonella* spp. presence. Fall months were associated with a higher *Salmonella* prevalence (13.2%) compared to early spring and summer. A total of 5 isolates, among the 383 samples, were serotyped as ST and STM. These two serotypes showed a similar seasonal presence throughout the study, being mostly found during fall and summer seasons. These findings demonstrated the seasonal presence of *Salmonella* spp. in feed mills and the role of these environments as potential pathogen entry route into the human food chain.

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 This report has not been peer-reviewed.

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