RESEARCH ABSTRACT

PORK SAFETY

Title: Longitudinal evaluation of the effect of ventilation and environmental management of swine barns on *Salmonella* prevalence in finishing swine **NPB #05-041**

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Abstract:

There is a critical need to identify whether there are cost-effective pre-harvest interventions for control of *Salmonella*. Particularly attractive are interventions that would have animal health and performance benefits, allowing producers to recoup investments for *Salmonella* control from improved production efficiency. Previous work has indicated that there is an association between season and/or environmental temperature and *Salmonella* prevalence in finishing swine. What makes further evaluation of this risk factor promising is that there are production performance and pig health advantages to maintaining proper ventilation for swine buildings, which could help off-set extra costs associated with improvement in ventilation engineering and management. Five placements of finisher pigs in three barns were sampled monthly to determine the association between the barn environment (temperature, relative humidity, ammonia and duct concentrations) and *Salmonella* shedding in swine. Barns were divided into 12 regions fro the purposes of monitoring environmental parameters and determining *Salmonella* prevalence. All barns were *Salmonella* positive, and regional fecal prevalence averaged 4.9% (range 0-62.5%). Pigs in the early finisher stage (~10-11 weeks old) were at greater risk to shed *Salmonella* when the regional temperature was less than 75^{o}F. Late finishing phase swine (18-22 weeks old) in a region that had a temperature greater than 75^{o}F had a greater *Salmonella* prevalence than those in a region at temperature less than 75^{o}F. No association between relative humidity, ammonia concentration or dust concentration and *Salmonella* prevalence was found in this study. These data hold promise for designing interventions pre-harvest that have positive impacts on swine health, production performance and food safety.