Observation of *Salmonella* Seroprevalence of Commercial Non-Vaccinated Pig Flow in the Eastern United States

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INTRODUCTION

An association between *Salmonella* serology and prevalence of *Salmonella bacteria* post-harvest has been established. Pork producers may be able to help reduce the prevalence of *Salmonella* at slaughter through on-farm interventions. Efforts have been concentrated to reduce post-harvest *Salmonella* contamination, but a better grasp on the level of *Salmonella* exposure occurring pre-harvest is needed. In an effort to understand the complex population dynamics of *Salmonella* exposure, a cross sectional analysis was performed to collect data from various stages of production.

MATERIALS AND METHODS

Five sow farm flows in northeastern USA were enrolled. All of the pigs were housed in modern commercial facilities. Pigs were not vaccinated for *Salmonella* and originated from unvaccinated sows. One flow (A) was classified as having no clinical history of scours or *Salmonella*. Four flows were selected due to sporadic observations of scours thru grow-out (B, C, D, & E) although *Salmonella* was rarely cultured. Serum was collected from 10 pigs at 4, 7, 12, 16, 20, 24, and 27 weeks of age (n = 350). All laboratory testing was done at the Boehringer Ingelheim Vetmedica Inc. Health Management Center (Ames, Iowa, USA). Samples were tested using VETSIGN™ Salmonella-Ab ELISA (Svanova, Uppsala, Sweden) which has been shown to accurately detect a broad spectrum of serotypes in serum.

RESULTS

Antibodies to *Salmonella* were detected in 46.4 % of the pigs sampled. Antibodies to *Salmonella* were detected in 40 % of the samples from flow A, while all other flows ranged from 35.7 to 62.9 % positive. Across all flows, 24-week-old pigs consistently had the highest prevalence of *Salmonella* positive samples with 84 % having antibodies. Alternatively pigs at 4 weeks of age had the lowest prevalence with only 18 % of samples *Salmonella* positive. Pigs at 7, 12, 16, and 20 weeks of age had *Salmonella* positive samples 34, 38, 56, and 46 % of the time respectively.

Table 1: Salmonella-Ab ELISA

	% positive					
AGE (weeks)	**A**	**B**	**C**	**D**	**E**	**Average**
4	10	0	40	0	40	18
7	30	30	10	40	60	34
12	10	50	0	50	80	38
16	40	20	80	50	90	56
20	70	70	0	80	10	46
24	70	100	100	70	80	84
27	50	*	20	*	80	50
Total	40.0	45.0	35.7	48.3	62.9	46.4

*all pigs were marketed prior to testing age

DISCUSSION AND CONCLUSION

Salmonella antibodies were present in all flows regardless of historical observations. In older pigs, there was a peak increase in *Salmonella* positive samples which is consistent with previous literature. This could provide a single time point to monitor prevalence of *Salmonella* pre-harvest. Serology can be used as an indicator of *Salmonella* exposure pre-harvest, but needs to be used in combination with fecal culture and post-harvest surveillance in order to determine current *Salmonella* prevalence and contamination prior to interventions. Further investigation is necessary to determine if on-farm intervention programs can impact *Salmonella* fecal shedding and consequently reduce the prevalence of *Salmonella* at slaughter.