

Salmonella ELISA serology from weaned pigs as an indicator of salmonella circulation in breed to wean sites



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INTRODUCTION

Understanding prevalence of Salmonella in market pigs has become a priority within USDA. With this priority pork production systems have a greater interest in understanding Salmonella prevalence in market pigs and the relationship of this prevalence to breed-to-wean sites. In a European study, a 90% reduction in breeding herd Salmonella prevalence reduced market pig Salmonella prevalence in the lymph-node by 66%.¹

The objective of this study was to

- Evaluate the ability of an indirect Salmonella ELISA antibody test (Vetsign™, Svanova) to detect Salmonella positive weaned pigs (5 weeks of age)
- Determine if Salmonella antibodies at 5 and 9 weeks of age could be a predictor of Salmonella circulation at breed-to-wean sites.

MATERIALS AND METHODS

- At risk breed-to-wean sites (R: 300–800 sows) within a large pork production system
- Salmonella risk factors identified at the selected sites included:
 1. Open gutter flush
 2. Rodent feces observed in barn
 3. Sanitation practices below expectations
- Twenty, 5-week-old pigs from 12 breed-to-wean sites were tagged and bled post- nursery placement
- If ≥ 6 (30%) of the pigs demonstrated Salmonella ELISA antibodies the prevalence was considered high
- Pigs were retested 4 weeks later
- Decreasing Salmonella ELISA antibodies from these paired samples could then be interpreted as decreasing maternal antibodies
- If ≤ 5 weaned pigs were ELISA positive to Salmonella then the Salmonella prevalence of the breed-to-wean site was considered to be low

RESULTS

- Sites A,B,C,E and F had $\geq 30\%$ Salmonella ELISA positive pigs and that these ELISA titers decreased 4 weeks later in serial bled pigs (suggesting these antibodies were maternally derived)
- ELISA titer rose at site D four weeks later in serial bled pigs (suggesting active exposure)
- At sites G-L the Salmonella ELISA positive pigs were $< 30\%$. Pigs at sites G-L were not retested

Table 1: % Positive Salmonella ELISA (20 pigs / site)

Site	5 wks old (%)	9 wks old (%)
A	35	10
B	40	5
C	45	25
D	30	42
E	30	0
F	65	10
G	15	N/A
H	15	N/A
I	5	N/A
J	20	N/A
K	10	N/A
L	15	N/A

CONCLUSION

- Salmonella ELISA titers in 5 and 9-week-old pigs appears to be a predictor of Salmonella circulation of breed-to-wean sites
- Salmonella serological assays demonstrate the variation of maternal antibodies between the sites. Sites where high maternal antibody circulation has been identified are a concern and suggestive of increased Salmonella pressure at the breed-to-wean site
- Further investigation is planned at the source sites from which the 5-week-old pigs demonstrating $\geq 30\%$ positive findings originated

REFERENCES

1. European Food Safety Authority Panel. EFSA Jounl. 2010; <http://www.efsa.europa.eu/en/efsajournal/pub/1547.htm>.

