

# Evaluating the use of the EnviroBootie™ to detect *Salmonella* at five breed-to-wean sites.



T. Fangman, G. Cline, J. Seate  
Boehringer Ingelheim Vetmedica, Inc., St. Joseph, USA

## INTRODUCTION

The EnviroBootie™ (Hardy Industries) has been used to detect *Salmonella* Enteritidis in poultry<sup>1</sup> and *Salmonella* Choleraesuis and Typhimurium in swine<sup>2</sup>. The objective of this study was to utilize the EnviroBootie™ to identify *Salmonella* groups at five breed to wean sites suspected as having elevated *Salmonella* prevalence.



## MATERIALS AND METHODS

The five suspect sites chosen for evaluation had previously demonstrated > 30% percent positive *Salmonella* ELISA in 5 week old piglets originating from these sites (Svanova, Sweden). The suspect sites evaluated demonstrated *Salmonella* risk factors to include; poor sanitation practices, visible rodents and/or rodent feces and open gutter flush systems. The control site was a suspected low *Salmonella* prevalence farm following the same general layout and management as the other sites visited. The control site was selected as the 4 week old piglets seroconversion was < 10% percent positive *Salmonella* ELISA of pigs tested. Biosecurity practices upon entry at each site included; Tyvek coveralls, clean boots and plastic boot covers. Sanitized collection kits (12) utilized at each site included: 2 gloves and 2 EnviroBooties™ contained in individual whirl-pack bags (24 total booties/site). After securing the EnviroBooties™ (1 on each foot) the technician walked behind each row of sows (2 rows / alley) taking slow and deliberate steps. The technician also walked in pens, hallways and chutes. After walking to the end of each area to be sampled, the environmental booties were taken off and put back into its individual whirl-pack bag and sealed. This walk was repeated 12 times in each barn. Prior to leaving the site the 24 bootie samples were immediately placed on ice and overnight shipped to Iowa State University Veterinary Diagnostic Lab for *Salmonella* culture.

## RESULTS

Table 1 shows the different groupings of positive isolates found at the 5 suspect sites and 1 control site. The Group B *Salmonella* isolate was found at every site, and Group C1, was found at all but one site. Positive results were identified in places that appeared fecal material free, such as pens, hallways, and chutes.

Table 1: *Salmonella* Serogroups

Farm	Grouping of Positive Samples				
	B	C1	E	Poly	Untype
A	8	0	0	2	1
B	5	3	0	1	2
C	1	11	0	0	0
D	1	5	1	0	0
E	11	1	0	2	1
F / cntrl	2	5	0	6	0

## DISCUSSION

The EnviroBooties™ utilized to culture and identify *Salmonella* species picked up many positive samples at the 5 sites that demonstrated > 30% percent positive findings for *Salmonella* ELISA titers in 5-week-old pigs. Multiple *Salmonella* serogroups were identified and were widely diverse among the different sites. *Salmonella* species were evident in all environments but clinically relevant in weaned pigs where the breed-to-wean environments which also had rodents observed. Observable signs of rodents served as a visual risk factor suggestive of *Salmonella* challenge. The EnviroBootie™ is a sensitive method for picking up *Salmonella* isolates. Five representative samples from each site have been forwarded to the NVSL in Ames, IA for further serotyping (30 samples total). Results will be reported as they become available.

## REFERENCES

1. Federal Register. <http://www.gpo.gov/fdsys/pkg/FR-2009-07-09/pdf/E9-16119.pdf>
2. T. Fangman, G. Cline (2015) Evaluating The Use of EnviroBootie™ to Detect Lawsonia and Salmonella From Known Positive Concrete Surfaces. Allen D. Leman Swine Conference.
3. T. Fangman, D. Baumert, et al. (2015) Salmonella Elisa Serology from Weaned Pigs as an Indicator of Salmonella Circulation in Breed to Wean Sites. Allen D. Leman Swine Conference

