

Evaluating the use of an EnviroBootie™ to detect *Lawsonia* and *Salmonella* from known positive concrete surfaces



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INTRODUCTION

An EnviroBootie™ (Hardy Diagnostics) has been described in the poultry industry as a surveillance tool to identify the presence of *Salmonella enteritidis* following an FDA mandate for egg-layers¹.

- Demonstrate the feasibility of a cotton mesh bootie soaked in neutralizing broth as a surveillance tool for demonstrating the presence of enteric organisms in the growing pig environment.
- Evaluate the ability to detect *Lawsonia intracellularis*, *Salmonella choleraesuis* and *Salmonella Typhimurium* in the environment utilizing the environmental bootie

MATERIALS AND METHODS

- 20 ft x 60 ft solid concrete slab
- 3 blocks of 3 collection patterns (9 total)
 - Treatment block measured 10 ft x 2 ft
- Just prior to sample collection, 1 pint spray bottle was utilized to mist:
 - 1 x 100 dose bottle Enterisol® Ileitis
 - 1 x 100 dose bottle Enterisol Salmonella T/C®
- Technician intentionally walked each of nine 10 ft x 12 ft squares
 - 3 squares were walked in a cross pattern
 - 3 squares in a circle pattern
 - 3 squares by shuffling feet

*Note: walking pattern consisted of Heel-to-Toe steps across treated surface.

- Surveillance socks were placed into individual plastic bags (2/bag) containing 50 ml of DE neutral broth
- Two socks were placed into a plastic bag with neutralizing broth without exposure to concrete surface to serve as a negative control
- All samples were submitted to BI HMC for *Lawsonia* PCR and ISU-VDL for *Salmonella* culture

RESULTS

Table 1 shows all concrete samples were

- Positive for *Salmonella* culture
- PCR positive for *Lawsonia*
 - Except Rep 3 when shuffling feet
- The negative control sample was negative for *Lawsonia* PCR but positive via *Salmonella* culture

Table 1: Detection of *Salmonella* and *Lawsonia*

Pattern	Rep 1	Rep 2	Rep 3
Cross Pattern	Law+, Sal+	Law+, Sal+	Law+, Sal+
Circle Pattern	Law+, Sal+	Law+, Sal+	Law+, Sal+
Shuffling feet	Law+, Sal+	Law+, Sal+	Law-, Sal+
Control	Law+, Sal+		

DISCUSSION AND CONCLUSION

- The environmental bootie appears to be a valid and highly sensitive method for detecting *Lawsonia* via PCR and *Salmonella* via culture on a concrete surface independent of walking pattern utilized
- Walking in a circle or cross pattern across the concrete surface was 100% effective in detecting the known *Salmonella* or *Lawsonia* applied to the concrete surface
- A positive *Salmonella* culture of the control sample (no concrete contact) suggests strict attention will need to be given to handling and packing of samples for shipping

REFERENCES

1. Federal Register: <http://www.gpo.gov/fdsys/pkg/FR-2009-07-09/pdf/E9-16119.pdf>

