Prevalence of Salmonella on commercial layer farms in Barbados, 2009 – 2010

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BACKGROUND

During January – March 2009 an outbreak of Salmonella was detected in four commercial layer farms in Barbados; 511 layers died and 3,257 layers were voluntarily culled. Salmonella Enteritidis (SE) was identified in avian tissues (ovaries, liver, uterus), and egg samples submitted to the Ministry of Agriculture, Food, Fisheries, and Water Resource Management (MAFFW) Veterinary Services (VS) Laboratory. MAFFW VS conducted a survey to investigate the prevalence of Salmonella on commercial layer farms in Barbados. The relationships between farm-level exposure factors and diagnosis of Salmonella were also examined.

OBJECTIVES

- To estimate the prevalence of Salmonella in egg-laying farms in Barbados
- To examine the relationship between farm-level factors and diagnosis of Salmonella in study farms

MATERIALS & METHODS

Study Population
- 26 commercial layer farms

Sampling
- Samples of eggs (30 from each pen)
- Environmental samples of dust, bedding, droppings, feed, and swabs of wood, pen wire, nesting boxes, drinkers, and feeders

Questionnaire (exposure factors measured)
- number of employees
- holding size
- biosecurity
- general farm management
- cleaning and disinfection

Data Analysis
Logistic regression was used to compare the frequency of exposure factors between farms classified as positive or negative to Salmonella.

Laboratory Analysis
- Bacteriology for culture and identification of Salmonella isolates

RESULTS

Prevalence of Salmonella on layer farms in Barbados estimated to be 69% (95% CI = 51, 86).

<table>
<thead>
<tr>
<th>Serotype</th>
<th>No. of farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enteritidis</td>
<td>9</td>
</tr>
<tr>
<td>Kentucky</td>
<td>5</td>
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<tr>
<td>Rabislaw</td>
<td>3</td>
</tr>
<tr>
<td>Typhimurium</td>
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</tr>
<tr>
<td>Weltevreden</td>
<td>2</td>
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<td>Mbandaka</td>
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</tr>
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<td>Idikan</td>
<td>1</td>
</tr>
<tr>
<td>Ohio</td>
<td>1</td>
</tr>
<tr>
<td>Alachua</td>
<td>1</td>
</tr>
<tr>
<td>Seftenberg</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 1: Serotypes identified on layer farms in Barbados

CONCLUSION & DISCUSSION

- Prevalence of Salmonella on commercial layer farms in Barbados is high
- Salmonella Enteritidis is the most common serotype found
- Salmonella is more likely to be found on large farms than on small farms
- A task force composed of public health officials, animal health officials, and industry representatives should be created to formulate, implement, and evaluate a voluntary surveillance program to reduce the risk of Salmonella infection and contamination on commercial layer farms.

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