Factors associated to *Amblyomma variegatum* (TBT) presence on farms in Nevis in 2007-2009 and determination of areas of high risks for TBT.

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**BACKGROUND**

**TBT in Nevis: major challenge to livestock industry**

- **First reported during 1970’s**
- **TBT responsible for high morbidity & high mortality in ruminants in Nevis.**
- **Control and eradication effort**
  - Numerous control strategies used that are challenging to sustain
  - 1996-2006: Caribbean Amblyomma Programme (CAP)
- **High level of surveillance facilitated the monitoring of the dramatic reduction of annual number of dermatophilosis cases, since the start of the CAP.**

**Objectives**

- Determine the factors associated with TBT presence on farms

**Materials & Methods**

**Epidemiological unit – Ruminants farms**

**Study design – Matched case/control study**

**Study Population**

- **Target**: all ruminants owners in Nevis
- **Source**: ruminants owners included in active TBT surveillance between January 2007 and December 2009 in Nevis (Vet Division monthly reports).

**Sampling strategy**

- **Case definition**: all farms that reported TBT infestation (on at least one animal).
- **Control definition**: farms without the occurrence of TBT but within the parishes where TBT cases occurred.
- 4 controls were randomly for each case reported, matching was by parish.

**Data collection**

- **Nevis Livestock farmers register**
- **Questionnaire** – designed to describe environment and husbandry practices in the farms; to assess basic awareness of livestock farmers on TBT and treatment and iii/ understand reasons for TBT dermatophilosis notification by farmers.
- Farms were georeferenced with GPS

**Survey response**

Overall, 146 farms were included in the study (representing 60% of the farms of the Nevis Livestock farmer register) among which 28 positive farms cases, mostly located in St John parish (see Fig.2). All farmers included in the study participated.

**Resident demographics**

The great majority of farmers who responded to the survey were more than 50 years old (70%), had small ruminants in their farms (90%) whereas slightly more than one fourth of respondents own cattle. Most respondent (2/3) lived in St John and St. James, whereas the remainder live in St. Georges and St. Thomas.

**Univariate analysis**

- 7 variables were found statistically associated to TBT farm status (Tables 1 & 2).
  - Presence of cattle and pigs on the farm are strongly associated to TBT presence.
  - There are significantly more cattle and pigs in case farms than in controls (Fig 1 & Table 2).
  - Farmers with high awareness (attend vet meetings, think TBT is a problem or calling vets for ticks).
  - No significant association of history of treatment, use of Baycol, either during study period or during the Cap evidenced.

**Discussion**

These preliminary results tend to indicate that several factors may be associated to the presence of TBT in the farms, mostly related to animals present on the farm (cattle, pigs). Farmers are more aware of tick issues when they are concerned by TBT, likely resulting in the significant association between TBT status and farmers awareness.

**Expected outcomes**

- Produce science based guidelines for the farmers on Nevis for the control of the TBT.
- Adopt guidelines that would lead to a reduction of the cost of production of meat and meat products on Nevis.
- To develop the skills necessary to conduct future epidemiological studies which could be applied for the enhancement of the Veterinary services on Nevis.

- Ultimately identify if certain risk factors relative to the awareness or behaviour of the farmers may have impacted the occurrence of Dermatophilosis /TBT on their animals/farms.

**Perspectives**

- Further data analysis (influence of animal management (tethered, roaming, housed, ...) roaming distance), investigation of correlation and interactions between variables
- Multivariate analysis to weigh the relative importance of variables
- Thorough interpretation of the results.
- Mapping of areas of high occurrence of TBT in Nevis

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**CONTROL & DISCUSSION**

**PROVISIONAL RESULTS**

**Table 1:** Animal population per farm according to TBT status. Result of univariate analysis

<table>
<thead>
<tr>
<th>No. of cattle</th>
<th>TBT positive</th>
<th>TBT negative</th>
<th>Test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.30</td>
<td>10.62</td>
<td>1.60</td>
<td>0.003</td>
<td>0.00023</td>
</tr>
<tr>
<td>2.13</td>
<td>10.62</td>
<td>1.60</td>
<td>0.003</td>
<td>0.00023</td>
</tr>
<tr>
<td>1.13</td>
<td>10.62</td>
<td>1.60</td>
<td>0.003</td>
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<td>0.00023</td>
</tr>
</tbody>
</table>

**Fig. 2 – Positive farms location by parish**

**Table 2:** Results of the univariate analysis - qualitative

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of farmer</td>
<td>1.21 (0.62-2.38)</td>
<td>0.5518</td>
</tr>
<tr>
<td>Sex</td>
<td>0.64 (0.20-1.97)</td>
<td>0.4275</td>
</tr>
<tr>
<td>Farm location</td>
<td>1.22 (0.78-1.90)</td>
<td>0.3833</td>
</tr>
<tr>
<td>Farm location</td>
<td>0.64 (0.20-1.97)</td>
<td>0.4275</td>
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*Figures and tables are not included in the provided text.*