Evaluation of Cross Grazing Deer with Sheep or Cattle to Control Gastrointestinal and Pulmonary Nematodes in Deer

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Title:
Gastrointestinal parasitism in deer

Overall aim:
To understand different aspects of GI parasite infection in deer, including pathogenicity, diagnosis and control.
Pen study

Aim

• To determine the establishment rate of sheep nematodes in weaner deer.

Hypothesis

• Ho: Deer can be host of gastrointestinal nematodes (GIN) of sheep.
L3 (mixed) sheep origin

**Overall study design**

- **pre1** • Allocated/ effectively treated
- **W** • Adaptation/FEC/weight
- **E** • Mixed Infected/FEC/weight
- **1** • FEC/weight
- **E** • FEC/weight
- **K** • FEC/weight
- **3** • FEC/weight/Euthanized

**N=5**

**N=5**
## Results

<table>
<thead>
<tr>
<th>ESTABLISMENT RATE (%)</th>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FEC</strong></td>
<td><strong>H. contortus (%)</strong></td>
<td><strong>T. circumcincta (%)</strong></td>
<td><strong>C. curticei (%)</strong></td>
<td><strong>Trichostrongylus spp. (%)</strong></td>
<td><strong>Oesophagostomum + Chabertia spp. (%)</strong></td>
</tr>
<tr>
<td><strong>Deer</strong></td>
<td>350</td>
<td>10.7</td>
<td>1.4</td>
<td>0.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Mean</td>
<td>10.5 (0.03)</td>
<td>1.0 (0.04)</td>
<td>0.1 (0.04)</td>
<td>1.0 (0.05)</td>
<td>4.8 (0.06)</td>
</tr>
<tr>
<td><strong>Sheep</strong></td>
<td>4750</td>
<td>18.8</td>
<td>35.8</td>
<td>31.1</td>
<td>73.9</td>
</tr>
<tr>
<td>Mean</td>
<td>18.6 (0.03)</td>
<td>35.5 (0.04)</td>
<td>30.7 (0.04)</td>
<td>74.9 (0.05)</td>
<td>19.9 (0.06)</td>
</tr>
</tbody>
</table>

1 Probability of significant differences between deer and sheep.
Aim

The aim is to determine the value of an organised cross-grazing system between sheep/cattle and deer to control deer nematode parasitism.

Hypothesis

Ho: Cross-grazing deer with cattle or sheep does control nematode parasitism
Overall study design

Field study

<table>
<thead>
<tr>
<th>GROUPS</th>
<th>DD</th>
<th>DC</th>
<th>DS</th>
<th>SP†</th>
</tr>
</thead>
</table>

20 deer (or equiv stock rate)

| 3 tracers† | 3 tracers |

18 deer (or equiv stock rate)

| 3 tracers | 3 tracers |

† SP = Suppressed group drenched every 2 weeks
‡ two sets of 3 tracers per group per season per location
Trigger treatment
Growth rate 20 % less than “SP” group
FEC (250) / FLC (100) / Clinical signs of parasitism.

Measurements
LW every 2 weeks
FEC, FLC (2 weeks)
PCR larvae speciation
Worm count
Pasture dry matter.

Parameters in order of importance
Number of treatments given and when
Liveweight
Faecal egg counts
Worm burdens in tracer animals
Results: Number of treatments overall

Average (%) treatments
Massey 2012

Average (%) treatment
Massey 2013
**Results:** Weights

**Average weight Massey 2012**

![Graph showing weight gain over weeks for Massey 2012]

**Average weights Massey 2013**

![Graph showing weight gain over weeks for Massey 2013]

**Average weights Invermay 2012**

![Graph showing weight gain over weeks for Invermay 2012]

**GROUPS**

- DD
- DC
- DS
- SP
Results: Abomasal worm counts

Massey 4 May 2012

Massey 27 June 2012

Invermay 4 May 2012

Invermay 27 June 2012
Results: Abomasal speciation 2012

Invermay 27 June 2012

Speciation DC group

Worm mean

Speciation (%)
**Results:** Massey large intestinal *Oesophagostomum* counts.
Results: Massey lungworm counts

- DD: May-12 (600), Jun-12 (200)
- DC: May-12 (100), Jun-12 (0), Apr-13 (0)
- DS: May-12 (0), Jun-12 (0), Apr-13 (0)
- SP: May-12 (0), Jun-12 (0), Apr-13 (0)