Response to cobalt supplementation in lambs

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1. Introduction
- The ability of lambs to utilize grass efficiently is dependent on their health, nutritional status, and grass feed value
- Infection by gastrointestinal parasites is one of the main factors affecting lambs performance and welfare
- Trace elements such as selenium and cobalt play an important role within the immune system and are thus likely to influence their ability to tolerate parasite infections
- One of the aims of this study was to assess whether supplementing lambs with cobalt from weaning had an effect on their growth and worm status

2. Methods
- 40 twin lambs were monitored at each of 6 lowland farms in Northern Ireland (Highlander x, Lleyn x, Texel x, Belclare x) in 2014
- At each farm, all lambs were given selenium injection and half also received 10 mL of cobalt drench orally every four weeks
- Data were analysed using mixed models with farm, treatment, breed, gender as fixed effects and ewe identity as random effect

3. Results
- Levels of vit B12 in lambs were very variable within and between farms (Figure 1)
- This partly reflected the low levels of cobalt in the grass grazed by the lambs (Figure 2)
- Response to supplementation was not consistent across farms, and overall there were no effects on growth and worm status (Table 1) (several worm species were monitored in faecal samples)

Table 1. Effects of cobalt supplementation on lamb growth and worm status (farms 3 to 6)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Control</th>
<th>Cobalt</th>
<th>sed</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live weight gain (g/d)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weaning to weaning + 1mth</td>
<td>171</td>
<td>164</td>
<td>12.0</td>
<td>NS</td>
</tr>
<tr>
<td>Weaning to weaning + 2mth</td>
<td>144</td>
<td>147</td>
<td>9.6</td>
<td>NS</td>
</tr>
<tr>
<td>Weaning + 1mth to weaning + 2mth</td>
<td>119</td>
<td>140</td>
<td>16.9</td>
<td>NS</td>
</tr>
<tr>
<td>Worm faecal egg count (strongyle epg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At weaning + 1mth</td>
<td>343</td>
<td>348</td>
<td>59.9</td>
<td>NS</td>
</tr>
<tr>
<td>At weaning + 2mth</td>
<td>352</td>
<td>275</td>
<td>56.2</td>
<td>NS</td>
</tr>
</tbody>
</table>

4. Conclusions
- Cobalt levels in grazed grass were low, with important spatial and seasonal variability
- No consistent effect of cobalt supplementation was found, mostly due to the important variability in the levels of blood vitamin B12 among lambs
- Future research work should investigate supplementation strategies defined at a site/flock specific level, targeted at deficient animals, for improved cost efficiency
- We thank DARD and AgriSearch for funding this work

Figures:
- Figure 1. Blood vitamin B12 (pmol/l) in lambs at weaning + 1 month (200pmol/l represents the minimum recommended level)
- Figure 2. Cobalt levels in grass (mg/kg DM) from four fields in each of the 6 study farms in July 2014 (the dotted line represents the recommended minimum level)