Genetic parameters of lamb survival for Dorset, Lleyn and Texel sheep

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Lamb Survival

• Important trait for the sheep industry

• Key factor in terms of:
  - Animal Welfare
  - Flock profitability

• Influenced by a wide range of factors
  - Genetics an important part
Materials & Methods

• Survival Definition

- Considered as a binary trait (0/1)
- Trait of the lamb (not the ewe)
- Dead = 0
  - Born dead and lambs born alive but no subsequent live weights
- Alive = 1
  - Lambs with a live weight

Birth

Mid-lactation
≈ 8 weeks old

Weaning
≈ 20 weeks old
Materials & Methods

- Data from performance recorded Dorset, Lleyn and Texel flocks

- Lambs born 2003 - 2013
  - Dorset - 15,433 records
  - Lleyn - 51,174 records
  - Texel - 48,995 records

- Additional analyses
  - Scottish Blackface - 173,895 records (Conington et al. EAAP 2014)
Materials & Methods

• Genetic parameters estimated using univariate analyses in ASReml. (Gilmour et. al, 2009)

• Animal model & LOGIT link function

• Model:
  - Litter size at birth + Sex + Farm + Birth year + Ewe age + Lamb birth weight + (Birth year x Birth Month)

• Heritabilities transformed
Results

Proportion of lambs that did not survive

% Dead

Breed

Blackface  Lleyn  Dorset  Texel
Results

Dead lambs according to their sex

<table>
<thead>
<tr>
<th>Breed</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackface</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Dorset</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Lleyn</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Texel</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>
Heritability Estimates

Lamb survival heritabilities

<table>
<thead>
<tr>
<th>Breed</th>
<th>Heritability (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackface</td>
<td>9</td>
</tr>
<tr>
<td>Lleyn</td>
<td>5</td>
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</tbody>
</table>
Conclusions

• Lamb survival has a low heritability

• Important trait to consider as a future breeding goal
  - Can improve animal resilience and identify families with good survival

• However, are dead lambs always being recorded?
Conclusions

- Improvements in the level of recording
  - Could increase heritability estimates and improve the rate of genetic progress.

- Is there an option in the future to incorporate pregnancy scanning data?
  - Increase data available
  - Improve knowledge of lamb deaths pre- and post-lambing