Integrating Electronic Identification into Hill Sheep Management

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Leading the way in Agriculture and Rural Research, Education and Consulting
Kirkton: New phase from 2011

- 3 genotypes
  - High index Scottish Blackface
  - Average index Scottish Blackface
  - Lleyn

- 2 management systems:
  - Conventional system
  - Precision Livestock Farming (PLF)
## System differences

<table>
<thead>
<tr>
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<th>Conventional group</th>
<th>PLF group</th>
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</thead>
<tbody>
<tr>
<td>Winter feeding of ewes (mating – lambing)</td>
<td>Based on CS + scan result (from Feb)</td>
<td>Based on % weight change + scan result (from Feb)</td>
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<tr>
<td>Worming of lambs</td>
<td>Whole flock approach based on pooled faecal egg counts</td>
<td>Targeted Selective Treatment based on weight change of individuals</td>
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<tr>
<td>Longevity</td>
<td>Sold after 4 crops</td>
<td>No culling on age</td>
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+ testing of different tup lamb finishing regimes (across systems/ genotypes)
Preliminary results

• Successful implementation of PLF methods
• Amount of wormer reduced while achieving similar growth rates
• Small monetary saving due to the drench reduction
• Major benefit will be slowed build up of anthelmintic resistance
• PLF group lost significantly less weight from pre-mating to scanning
• Effect of overall systems need to be explored in more detail (effect on lamb vigour, longevity, lamb growth, losses etc.)
Indentification of new strains and traits....
“Identification of strains, traits and management practices that are beneficial for livestock disease resistance, health, welfare, production efficiency and resilience to climate change”

- FEC - DAG\* - CARLA\* – Live weight
- FEC strongyles + FEC Nematodirus + 4 others
- ~500 lambs sampled / year since 2011
- New low FEC selection line – aim to reduce drenching
Do we need to count all types of worm?

L₃ % composition

- Trichostrongylus spp. 72%
- Teladorsagia spp. 14%
- Cooperia spp. 1%
- Nematodirus spp. 9%
- Oesophagostomum spp. 4%

Genetic correlation

Strongyles & Nematodirus

0.4 (s.e.0.14)

Sokratis Ptochos, SRUC
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Selection against strongyles also will affect nematodirus

n=3,344
Breeding more resistant sheep to internal parasites 2012-2015

• Alternatives to FEC?
• Genetic basis
• Best way to implement
Breeding more resistant sheep to internal parasites

Direct heritability = 0.23 (0.06)
Repeatability = 0.33 (0.05)

- Alternatives to FEC?
- Genetic basis?
- Best way to implement
Is CARLA useful?

Heritability = 0.25

Link with live weight (genetic corr) = 0.42
Is CARLA useful?

Link with FEC & NEM = -0.05

Genetic link = -0.16(FEC) -0.09(NEM)
Is CARLA useful?

Link with FEC & NEM = -0.05

Genetic link = -0.16 (FEC) - 0.09 (NEM)

CARLA had very weak links with FEC and NEM in this study.
“Optimising UK sheep breeding programmes by the inclusion of Genotype x Environment (GxE) interactions”

• G x E = ‘what may be the best performing genotype in one environment may not necessarily be the best performing genotype in another’
• Source of inefficiency in animal breeding
• Leads to re-ranking and scaling
• Requires farms to be ‘defined’