Combatting the real threats to the sheep farming business – biosecurity.

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Wednesday 21st November 10.45 – 11.20 am.
Speaker for 20 minutes and 15 minutes for questions and discussion
Do we need an efficient and productive UK sheep industry?

- World population $7 \times 10^9$
  - India $1.2 \times 10^9$ (360 people/sq km.)
- Need to be fed, clothed, housed and provided with energy.
- Importance of national and global agricultural production.
- Challenges of global warming and water demand mismatch.
- **Role of veterinary education and research in securing efficient and sustainable livestock production.**
Why do we need an efficient and productive UK sheep industry?

- World population $7 \times 10^9$
- Need to consider UK sheep production as an important part of a global food and energy producing industry.
- Challenges of global warming and water demand mismatch.
- Role of veterinary education and research in securing efficient and sustainable livestock production.
Stratification of the UK Sheep industry

Hill (40%)
- Hill rams
- Hill ewes

Upland (19%)
- Upland rams
- Longwool rams
- Draft hill ewes

Lowland (41%)
- Lowland rams
- Terminal sire rams
- Crossbred ewes
• **Advantages**
  – Allows sheep production in marginal hill and upland areas
    • socioeconomic and environmental benefits.
  – Hybrid vigour in F₁ Greyfaces, Mules and Halfbreds.
  – Genetic diversity in the national flock
    • sheep that are suitable for diverse environments and production systems.
    • certain breeds may remain productive in the face of future challenges
      – climate change.
      – water supply.
      – demands of global population growth.
      – unforeseeable threats.

• **Disadvantages**
  – Genetic selection for advantageous phenotypes
    • ease of lambing and mothering ability.
    • resistance or resilience to disease.
  – Animal movements
    • welfare.
    • disease spread.
Advantages

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Disadvantages

– Genetic selection for advantageous phenotypes
  • ease of lambing and mothering ability.
  • resistance or resilience to disease.

– Animal movements
  • welfare.
  • disease spread.
• What is the most likely cause of these signs?
• What are the possible consequences of introduction of the problem to another flock?
• What other diseases can be introduced with ‘apparently healthy’ purchased sheep?
• What is the potential economic impact of introduction of these diseases?
• How can the risk of introduction of production-limiting disease be managed?

Nibbling at the feet and lower limbs observed in a pen of valuable ram lambs for sale.
What is the most likely cause of these signs?

- Ectoparasites
  - *Chorioptes bovis* (chorioptic mange)?
  - *Sarcoptes scabei* (sarcoptic mange)?
  - *Thrombicula autumnalis* (harvest mites)?
  - *Linognathus pedalis* (sucking lice)?
  - *Ixodes ricinus* (ticks)?
  - Exotic ticks?
  - *Ctenocephalides felis* (fleas)?

- Other skin diseases?
• Some of these ectoparasites are endemic in the UK.
• Some of these ectoparasites are exotic to the UK, but present in the EU.
• It is not possible to determine whether or not the sheep are infested before taking them home.
• Additional role of ectoparasites as intermediate hosts for pathogens.
• Roles of ectoparasites as zoonoses and as vectors of zoonotic diseases.
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NEED FOR QUARANTINE ISOLATION AND TESTING.

How often is this performed effectively?

Is it any surprise that new diseases spread once introduced to the UK?
What are the possible consequences of introduction of this problem to another flock?

• This is probably chorioptic mange.
  – scrotal mange in rams is a potential cause of poor reproductive performance.
  – control of chorioptic mange or its eradication from a flock is not straightforward.
What are the possible consequences of introduction of this problem to another flock?

The impact of chorioptic mange may not be high, but it is nevertheless an example of just one more problem that would be better if it were absent.

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  - Scrotal mange in rams is a potential cause of poor reproductive performance.
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What other diseases could be introduced with these ‘healthy-looking’ added animals?

- Other ectoparasites?
- Vector borne or associated diseases?
- Endoparasites?
- Bacterial, rickettsial, viral or prion diseases?
- Genetic disorders?
- Slow onset diseases?
- Antimicrobial and anthelmintic resistance?
- Exotic diseases?

Distress and open-mouthed breathing observed at the Kelso ram sales.
Orf?
Chalmydial abortion?
Salmonellosis?
Footrot?
CODD?
Border disease?
Ringworm?

Triclabendazole resistant fluke?
Multiple-resistant nematodes?
Plasmid-conferred antimicrobial resistance?

Heritable disorders?
Lack of protective immunity to endemic diseases?
Deficiencies?

Schmallenberg virus?
Bluetongue?
Foot and mouth?
Sheep pox?
Peste Pes Petits Ruminants?

Tuberculosis?
Johne’s disease?
Maedi Visna?
Jaagsiekte?
Caseous lymphadentiis?
TSEs?

Nematodes?
Trematodes?
Cestodes?

Sheep scab?
Chewing lice?
Keds?
Warbles?

Louping ill?
Tick borne fever?
Coxiella burnettii?
Babesiosis?
What are the potential economic consequences of introduction of these diseases?

- Direct effects on production?
- Difficulties of disease control?
- Effects on quality assurance?
- Effects on trade?

Pruritus in introduced hoggs caused by chewing louse infestation.
Discussion - which are ‘iceberg’ diseases?

- Slow onset diseases
  - Maedi visna.
  - Jaagsiekte.
  - Johne’s disease.
  - Caseous lymphadenitis.
  - Tuberculosis.
  - Border disease.
  - TSEs.
The SAC (AHVLA, EBLEX, HCC) has recently tested 20 ewe blood samples from flocks throughout the UK for a MV seroprevalence survey.

### Within national flock

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<thead>
<tr>
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<th>1995-6</th>
<th>Current</th>
<th>Change</th>
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<tbody>
<tr>
<td>No. of flocks tested</td>
<td>2277</td>
<td>726</td>
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<td>No. of sheep tested</td>
<td>41,593</td>
<td>11,757</td>
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<td>% of flocks infected</td>
<td>1.4%</td>
<td>2.8%</td>
<td>Doubled</td>
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<tr>
<td>No. infected sheep</td>
<td>0.19%</td>
<td>0.74%</td>
<td>Fourfold increase</td>
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<td>Average % of infected sheep within positive flocks</td>
<td>13%</td>
<td>24%</td>
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<td>Estimated no. of positive ewes in national flock</td>
<td>39,000 (based on 20.5 million ewes)</td>
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Doubled

Fourfold increase

Estimation of no. of positive ewes in national flock

SAC call for renewed biosecurity.

Is the predictive value of diagnostic tests for slow-onset diseases adequate or known?

What is the situation for ‘iceberg’ diseases for which there are currently no diagnostic tests?
Discussion - which are the top three endemic threats?

- **Trematodes** (*liver fluke*)
  - triclabendazole resistance.
  - influence of climate change.
  - emerging trematode infections.

- **Sheep scab**
  - unsustainable control.
  - diminishing control options.

- **Nematodes** (*roundworms*)
  - *multiple anthelmintic resistance*.
  - influences of climate and management change.
  - parasite evolution.
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IMPORTANTANCE OF EFFECTIVE BIOSECURITY.

Research focus on sustainable disease control.
- multiple anthelmintic resistance.
- influences of climate and management change.
- parasitaite evolution.
Discussion - which are the top three exotic threats?

• Foot and mouth disease
  – situation in Turkey?

• Vector-borne diseases
  – *Culicoides* – Schmallenberg virus.
  – *Culicoides* – bluetongue virus.
  – Ticks – viral, protozoal and rickettsial diseases.

• Cestodes
  – *Echinococcus multilocularis.*
Discussion - which are the top three exotic threats?

Changing climates, global population rise and animal movements as drivers for emerging new diseases.

**IMPORTANCE OF EFFECTIVE BIOSECURITY.**

Research and legislative focus on effective disease prevention and control.
What can be done to prevent the introduction of these diseases?

• **Quarantine**
  – Opportunity for clinical examination and/or treatment.
  – Opportunity for testing.

• **Treatments on arrival**
  – Anthelmintic resistant nematodes and trematodes.
  – Ectoparasites.
  – Foot lameness.

• **Introduction of disease free animals**
  – Health scheme accreditation.
  – Predictive value of tests used?

• **Control of endemic diseases**
  – Vaccination.
  – Treatments.
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Should our UK sheep industry be restructured?

- Is increased sheep UK production expedient?
  - fundamental importance of small ruminant production in resource-poor environments.
  - role of sheep farming in regions suited to cereal production?

- Impact of improved genetics and production methods?

- Increased production efficiency through improved animal health?
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- Importance of small ruminant production in resource-poor environments.
- Role of sheep farming in regions suited to cereal production?
- Impact of improved genetics and production methods?
- Increased production efficiency through improved animal health?

Our UK sheep industry must be profitable.

Intensive production systems must be well managed.

**IMPROVED ANIMAL HEALTH IS ESSENTIAL.**

Importance of sustainable management control of disease.