Fluke and Worm Infections In Cattle and Sheep

Douglas Gray
Veterinary Services
Aberdeen
Organic and Healthy!
Summary of Topics

• What do the standards say?
• Losses from fluke and worms
• Practical ways to prevent losses
• Control of liver fluke
• Control of worms
• Keeping an eye on things
• Certification Bodies are responsible for standards

**POSITIVE HEALTH** to be achieved by **PREVENTION**: 

- Selection of appropriate breeds
- Preventive husbandry strategies
- High quality feed, exercise and access to pasture
- Appropriate stocking densities

In addition, some certification bodies require farmers to produce an animal health plan to detail how good animal health and welfare will be achieved.

How can the standards be put into practice on individual farms?
Preventive Husbandry

- Disease prevention using biological knowledge rather than medicines
- Whole farm system approach
- Applicable to parasite disease?

**How?:** Disease prevention strategies

- Increasing animal immunity
- Optimising nutrition
- Good stockmanship
Disease Prevention Strategies

Prevent Entry: Closed herds/flocks
Quarantine treatments
Control of wildlife carriers

Reduce Exposure: Reduce stocking density
Grazing management
Reduce worm egg output
Treat to remove worms

Encourage Immunity: Control exposure
Improve Nutrition
Vaccines?
Medicine Use On Organic Farms

- Sick animals **MUST** be treated
- Medicines must be authorised for the species
  - Herbal/Homeopathic/Trace Elements to be used in preference - **IF EFFECTIVE**
- Veterinary medicines - Veterinary role
  - **Therapeutic**
  - **Strategic**
- Vaccines - where there is a known disease risk
- Not permitted - Ivermectins Monepantel
- Records and withdrawal periods
- “Four strikes and you’re out” (Not wormers)
Adult Liver Flukes
(*Fasciola hepatica*)
Liver Fluke Infections

- What effects do they have?
- Liver fluke life cycle
- Factors affecting life cycle
- Understanding the disease
- Treatment and control options
- Diagnosis and monitoring
Liver Fluke - Losses/Costs

- Deaths due to acute fluke (Sheep)
- Ill Thrift/Deaths due to sub-acute fluke (Sheep)
- Ill Thrift/Loss of productivity due to chronic fluke (Cattle/Sheep)
- Liver condemnations
- Costs of prevention/treatment
- Costs of related disease
Liver fluke life cycle: Minimum duration 4-5 Months

Prepatent period 10-12 weeks

6-8 weeks development in snail
Mud snails: Intermediate host of liver fluke
Liver Fluke Life Cycle - Features

- Availability of intermediate host (snails)
- Availability of mammalian hosts - Sheep, Cattle, Deer, Rabbits
- Effect of climate - Temperature: >10°C, Rainfall (summer)
- Suitable snail habitats - Mud
- Mammalian host immunity
Liver Fluke Disease

• Acute/Subacute Disease
  - 0-8 weeks after infection
  - Immature fluke migration, direct liver damage, internal bleeding - death

• Chronic Disease
  - More than 8 weeks after infection
  - Adults migrate up bile ducts, feeding causes anaemia, chronic liver damage
Understanding Acute and Chronic Fluke Disease

- **Acute Fluke disease**
  - Increase in eggs on pasture in **June**

- **Chronic Fluke disease**
  - Increase in metacercaria on grass in **December**
### Clinical Signs

<table>
<thead>
<tr>
<th></th>
<th>Cattle</th>
<th>Sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute</strong></td>
<td>Rare</td>
<td>Sudden Death</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anaemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abdominal Pain</td>
</tr>
<tr>
<td><strong>Sub-Acute</strong></td>
<td>Possible in Calves</td>
<td>Ill Thrift</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lethargy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Poor Fleeces</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anaemia</td>
</tr>
<tr>
<td><strong>Chronic</strong></td>
<td>Loss of Condition</td>
<td>Loss of Condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emaciation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bottle Jaw</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anaemia</td>
</tr>
</tbody>
</table>
Acute Liver Fluke: Sheep

Immature (4-6 week) flukes

Affected ovine liver
Chronic Liver Fluke: Sheep

Bottle jaw

Adult flukes
Liver Fluke Disease in Cattle

Tracts of migrating immature flukes
Black Disease: Infectious Necrotic Hepatitis

*Clostridium novyi (oedematiens)*
Fluke Control Strategies

- Drainage to reduce snail habitats
- Fence wettest parts of farm and graze at low risk periods
- Strategic treatments
- Monitor for fluke
Fluke Treatments: Organic Aspects

- Evidence of infection?
- When to treat and with which drug?
- Acute: Immature flukes in Autumn
- Chronic: Adult flukes in winter
- Combined fluke and wormer?
- Resistance problems
- Extended withdrawal periods
- Build into Animal Health Plan?
Flukicides for cattle and sheep

• Fasinex/Tribex (Triclabendazole)#:
  Kills fluke from 2 days old (sheep), 2 weeks (cattle)

• Flukiver (Closantel)#: Sheep
  3-4 week old flukes: 23% to 73% effective
  5 week old flukes: 91% effective
  6-8 week old flukes: 91% to 95% effective
  Adult flukes: 97% to 100% effective

• Trodax (Nitroxynil): Adult and immature flukes

• Valbazen (Albendazole): Sheep Adults only
  # Effective against immature flukes
Consult your vet about the most appropriate drug FOR YOUR FARM!
Aims of Seasonal Fluke Treatments

• **Autumn** - To stop immature fluke migration, prevent liver damage, clinical disease (black disease), and improve ewe condition for pregnancy

• **Winter** - To kill adult flukes in the bile ducts and prevent liver/biliary damage and ill-thrift/anaemia during the winter

• **Spring** - To prevent eggs being laid on pasture which could infect snails in summer

• **Summer** - To prevent infection of snails and break the cycle of infection
Diagnosis and Monitoring of Fluke Infections

- Use of regular faecal fluke egg counts
- Use in cattle and sheep
- Can be done on bulked faeces sample
- At same time as faecal worm egg counts

When to do it?
- Cattle: At housing or turnout?
- Sheep
  - At winter gather (at scanning time)?
  - At marking gather?
Worms: Safe from harm!
Roundworm diseases in sheep and cattle

- Parasitic gastroenteritis (PGE)
- Scour and ill thrift
  - Ostertagia
  - Trichostrongylus
  - Cooperia
- Nematodirus
- Haemonchus
- Lungworms
Direct Life Cycle of Worms Causing PGE

Prepatent Period: Three weeks

Sheep/Cattle Adult Worms in:

Immature worms → Abomasum: Ostertagia, Haemonchus
Intestine: Trichostrongylus, Nematodirus

L3 Larvae on Pasture

Eggs in Faeces
Control of Worm Parasites

Grazing Management:
- Clean grazing
- Alternate grazing
- Mixed grazing
- Reduced stocking rates
- Use of immune animals
- Strategic moves

Nutritional Factors:
- Trace elements
- Metabolisable protein
- Bioactive forages

Immune status:
- Genetic Selection (FEC)

Wormers?
Wormers on Organic Farms

- Cannot be used routinely
- Use to treat scouring animals
- Limitations on wormer groups
- Can use strategically if needed (eg lambing ewes)
- Avoid development of AR (SCOPS guidelines)
Four Groups of Wormers

- **Group 1 (BZ)**: Benzimidazoles (White drenches)
- **Group 2 (LV)**: Levamisol (Yellow wormers)
- **Group 3 (ML)**: Ivermectin etc. (Clear wormers)
- **Group 4 (AD)**: Monepantel (Orange drench)

Broad spectrum wormers
Have A Strategy

- Work out a control strategy for your farm
- Develop a cost effective, reliable and sustainable plan
Treat Sheep in Quarantine

- Apply to all introduced sheep and goats
- Treat with an ML and an LV sequentially
- Hold off pasture (yard) for 24-48 hours
- Turn out on to dirty (contaminated) pasture
Worm Only if Necessary

- Lambs
  - treat only when necessary
  - extended intervals between dosing
- Ewes at tupping
- Ewes at lambing
- Use of faecal egg counts (FECs)
Worming Ewes Pre-tupping

- No routine drenching of fit adult ewes pre-tupping
- Drench immature or lean ewes only
- Use FECs?
Worming Ewes at Lambing

- Strategic use to reduce egg output?
- Fit ewes and those rearing singles do not have raised worm egg outputs
- A high protein ration also reduces egg output in twin bearing ewes
Faecal Egg Counts (FECs)

- FECs can give a useful guide to the worm burden in a group of sheep
- At least 10 animals should be sampled per group
- A “group” is a mob of sheep of the same sex, age, reproductive status and treatment history, grazing the same field
- The faeces from 10 sheep may be pooled (bulked), but only at the laboratory
Hold mob of sheep in corner of field
• Allow sheep to move after ten minutes
Collection of Dung Samples 3

- Collect ten fresh samples into individual pots or bags
- Use gloves
- Store samples in cool place
- Post samples as soon as possible or deliver to your vet or lab
WORMSCAN

- A farmer sampling kit for collecting 10 samples
- Approved packaging and pre-paid postage
- Results to vet & farmer
- Used to monitor fluke and worm
- Used to check wormer efficacy
Examples of bioactive forages

Chicory
(Chicorium intybus)

Sulla
(Hedysarum coronarium)
Effect of chicory on worm egg output (FEC) in lambs grazing a pure sward

FEC of lambs before weaning

- Grass/N
- Grass/A
- Chic/NA
- Chic/A

Eggs per g faeces

Days from birth

7 21 28 35 42 49 56 63 70 77