Iceberg Diseases

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ICEBERG DISEASES – what are they?

- Maedi visna virus
- Johne’s disease
- Ovine pulmonary adenocarcinoma
- Caseous lymphadentitis (CLA)
- Borders disease
Why are they called Iceberg diseases?
Characteristics of an Iceberg disease

- Production limiting
- Slow in onset - can take a long-time from infection being introduced into a flock before you signs of disease
- Signs of disease can be vague such as increased cull rate, ill thrift, reduced scanning percentage and reduced lamb growth rates
- Can be difficult to diagnose
- Difficult to control
Johne’s disease

- Caused by a bacteria
- Passed in faeces faecal/oral spread
- Chronic disease causing ill thrift and weight loss. Scour not always seen
- 5-10% losses in heavily infected flocks
- Can get oedema (fluid accumulation) under jaw due to protein loss.
Johnes disease

- Can be difficult to diagnose in the live animal
- Commonly diagnosed in our post mortem room
- Gut thickened in some cases the gut is yellow in colour
- No treatment
- Control difficult can consider vaccination but must do at young age.
- Cull hard removing thin animals.
- Don’t keep lambs for breeding stock of infected animals.
Ovine pulmonary adenocarcinoma (OPA)

- Infectious sheep lung cancer caused by a tumour forming virus
  Jaagsiekte
- Passed by nose to nose contact /aerosol
- Breathlessness falling behind the flock when gathered and handled progressing to laboured breathing and coughing and death
Ovine pulmonary adenocarcinoma (OPA)

- Losses can be 20-25% in recently infected flocks and around 1-5% thereafter. Also a reduction in productivity.
- No definitive diagnosis in live animal wheel barrow test/ scanning.
- Diagnosis at post mortem examination (commonly diagnosed).
- Control difficult: similar to Johne’s.
Maedi visna- What is it?

• Maedi visna is a viral infection

• It has a life long infection and there is currently no vaccination or cure.

• Infection can develop slowly and can take a number of years to develop.
How is MV transmitted?

- Nose to nose contact
- Colostrum & milk.
- During pregnancy (around 10% risk)
- Blood contaminated equipment
- Potential venereal risk
Transmission

Infected sheep

Healthy sheep becomes infected. Not yet detectable by testing.

After 3-6 months antibodies detected on blood test. Infected but still no signs of disease.
Transmission

Infection introduced into the flock

30% of flock infected no signs of disease

60% flock infected signs of disease seen in flock. Production affected
Factors affecting transmission of MV

• Housing and intensive management of animals

• Level of infection within a flock affects transmission

• In flocks where OPA is a problem infection rates can be increased
What to look out for in the individual animal

- Weight loss
- Rapid laboured breathing
- Ewes lagging behind flock
- Reduced milk production/no milk
- Swollen joints
- More rare hindlimb paralysis
Video two ewes
How could MV impact on my flocks production?

1. Reduces milk production by an estimated 10%
2. Increased lamb mortality (due to reduced milk) can be as high as 22%
3. Reduced weight gain in lambs
4. Premature culling estimated to be a year early due to poor productivity

Death rate is low in flocks where infection has been long established but can be 20-30% in newly infected animals.

POOR LAMB PERFORMANCE IS OFTEN THE FIRST INDICATOR OF A PROBLEM IN A FLOCK
Diagnosis

Target blood testing 12 older animals showing clinical signs of Maedi visna

OR Submit 2-3 older ewes for post mortem examination
Case example: 1500 Mule ewe flock

Background history:
- Replacements purchased as ewe lambs

Clinical signs:
- Increased mortality and ill thrift in ewes.
- Smaller lambs being born
- Poor lamb growth rates and poor weaning weights
- Lambing percentage 150%

Diagnosis:
- Target testing for MVV in six thin ewes performed for MVV
- 4 out of 6 ewes found to be MVV antibody positive.
Potential cost of MV

<table>
<thead>
<tr>
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<th>MV infected flock 150% lambing 10% mortality</th>
<th>Typical flock assuming 3% adult mortality and 180% lambing</th>
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</thead>
<tbody>
<tr>
<td>Loss of income from adult culls</td>
<td>£6000</td>
<td>£1800</td>
</tr>
<tr>
<td>Carcass disposal</td>
<td>£2250</td>
<td>£675</td>
</tr>
<tr>
<td>Replacement costs</td>
<td>£16,000</td>
<td>£5000</td>
</tr>
<tr>
<td>Reduced lamb sales</td>
<td>£20,250</td>
<td></td>
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<tr>
<td><strong>Total cost</strong></td>
<td><strong>£44,500</strong></td>
<td><strong>£7475</strong></td>
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Basic costing (based of 2010) and does not take into account labour, reduced lamb growth or treatment costs. Replacement cost per breeding female=£100 per head
Replacement cost per tup = £500 per head
Value of lamb sold= £45.00 per head

Potential total cost (vs typical): £37,025 per annum ongoing
Summary of testing in monitor farm flock

16/10/17: Cull ewe screen 10/12 MV antibody positive

30/10/17: Healthy animal screen
   11/12 mixed aged animal MV antibody positive
   5/12 gimmers tested MV antibody positive

30/10/17: 2 cull ewes submitted for post mortem examination. Maedi visna confirmed in one animal

27/12/17: Gimmer screen
   52% (171/326) MV antibody positive/inconclusive
Control- what to do in an infected flock?

First step to establish how many animals within the flock are infected

IDEAL: Recommended to test all animals in the flock over 12 months of age

REALITY: Test a percentage of the flock ensuring all age groups are tested

The decision on which control method to use will depend on:

• The current scale of losses in the flock
• The purpose of the flock
• The cost of the test and cull program.
Transmission

Infected sheep

Healthy sheep becomes infected. Not yet detectable by testing

After 3-6 months antibodies detected on blood test. Infected but no signs of disease.
Control options:

1. Manage the flock to limit losses
2. Test and cull
3. Separation of positives and creation of two flocks.
4. Cull flock and repopulate.
1. Manage flock to reduce losses “loss limitation”

- Cull animals showing any signs of Maedi visna virus
- Cull ewes early to maintain a young flock
- Reduce lamb losses by increased labour and increased feed input colostrum and milk substitutes.
- Manage extensively reduce time housed etc. to limit spread

There are large cost implications from this approach that would be ongoing.
2. Test and cull

- Test all sheep over 12 months every three to six months, cull all positive animals and their progeny.

- After two negative tests six months apart the flock can be classed as free of MV infection providing that:
  - Strict biosecurity procedures have been followed
  - No sheep of unknown health status has been purchased.

Quickest way to remove MV from the flock but not cost effective in most commercial flocks.
Separation of flock and creation of two flocks

This can be done in four ways:

1. Testing all animals in flock over 12 months of age and separating the flock into two groups one containing the “dirty animals” those testing antibody positive and the “semi-clean” group those testing antibody negative.

2. Test the gimmers only and separate antibody negative animals into a “semi clean group” and build a flock from these animals slowly

3. “Snatch lambs” from flock before they have taken any colostrum and start a nucleus flock from these animals

4. Buy in clean replacement gimmers and start a new nucleus flock from these animals
Points to consider with flock separation approach - Biosecurity

STRICT BIOSECURITY IS KEY

• Would require separate:
  – housing,
  – equipment
  – Ideally handling facilities.
  – Clothing and disinfection points

• When at grazing there should be a 2metre gap separating the two groups.

• How would difficult times like lambing be managed?
Other points to consider.

• Semi clean groups will still contain infected animals and this group will need tested on a 6 monthly basis and positive animals removed. Cost implications.

• It is thought that older animals that are antibody negative in a heavily infected flock may have some resistance to infection. This may be lost if starting a flock from gimmers.

• Increased personnel required if snatching lambs. Any that suckle colostrum may be at risk of being infected. How would this be managed practically?

• Infection can spread during pregnancy in 10% of cases so some animals will still be infected even if snatched.
4. Cull flock and repopulate

- Need to consider source of replacements.
- Would you be able to source sufficient MV accredited animals to restock?
- What else might you be buying in?
- Maedi visna virus does not survive long in the outside environment so a week is sufficient before repopulating.
What can you do?

• Find out what diseases might be present on your farm hopefully before they become too widespread.

• Most cost effective approach is to monitor with post mortem of fallen stock and cull ewes.

• Consider sources of replacements and think about testing.

• IF infection is found in your flock work with your vet to establish a control program. Don’t bury your head in the sand!
Any questions?