

## ANIMAL WELFARE

## Footrot and lameness in sheep

**SAC Veterinary Services hosted a workshop at the Pentlands Science Park, Edinburgh, last year, to discuss issues surrounding the diagnosis and treatment of lameness in sheep. The workshop was chaired by Dr David Henderson, of the Farm Animal Welfare Council, with Mr Brian Hosie, of SAC Veterinary Services, fulfilling the role of secretary. Here, Mr Hosie describes the proceedings and the conclusions reached by the 14 delegates attending the workshop**

THE workshop began with a presentation from Mr Brian Hosie on the Scottish perspective on ovine footrot. It was followed by presentations of the results of farmers' surveys in England and Wales by Dr Rose Grogono-Thomas and Dr Geert Wassink, from Bristol and Warwick universities, respectively. Mr Chris Lewis, a private sheep veterinary consultant, spoke on the role of footrot vaccines and Mr Ian Davies, VLA – Shrewsbury, described the microbiology of ovine footrot and contagious ovine digital dermatitis (CODD). Ms Lesley Stubbings, another private sheep consultant, discussed practical considerations regarding lameness in flocks and Dr Kym Abbott described the Australian footrot scoring system developed by J. R. Egerton of the University of Sydney.

The information presented was discussed in the afternoon and the following recommendations were agreed.

### DIAGNOSIS OF LAMENESS

From an initial diagnosis of 'lameness', the workshop identified:

- Interdigital dermatitis (OID or scald)/benign footrot (BFR);
- Footrot (under-run lesions and lameness);
- Other causes of lameness.

Effective management of lameness at a flock level depends on an accurate diagnosis based on the clinical examination of a significant number of sheep (over 30). The following was proposed as a basis for diagnosis by farmers:

- Lesions of OID and BFR are generally restricted to the interdigital skin;
- Lesions of virulent footrot lead to under-running of the sole of the hoof in a high proportion of cases;
- CODD characteristically begins with a lesion in the skin at the coronary band.

OID or scald is clinically indistinguishable from BFR and early virulent footrot. Outbreaks of OID are typically seen in lambs on pastures and among ewes wintered on straw bedding. Wet conditions underfoot predispose the interdigital skin to OID.

Farmers should seek a veterinary diagnosis to differentiate CODD from footrot or other foot conditions.

### TREATMENT

#### For OID and BFR

Walking the flock through a 3 per cent formalin or 10 per cent zinc sulphate footbath (preferably 8 metres long) can be very effective but the protection provided by footbathing during the transmission period is short, probably only two or three days. Repeat treatments are necessary during the transmission period. This should be every five days but less often (14 days) if the sheep are moved onto clean pasture after each treatment. However, cases of OID and BFR tend to recover spontaneously in dry weather.

The workshop disagreed on whether topical sprays were effective for the treatment of OID. The majority of delegates did not believe that they were effective.

#### For footrot

Five treatments for footrot were identified: paring, footbathing, topical antibiotic, parenteral antibiotic and vaccination. Affected sheep should be segregated from unaffected sheep for treatment.

#### Paring

Paring should only be employed where it is absolutely necessary. The idea of turning every sheep up and paring its feet is outmoded but the alternative requires the timely institution of effective control measures. Only pare feet that are misshapen or before treatment with a footbath. Lameness often develops from poor paring techniques. Once footrot is cured the need for trimming disappears. Ideally, sheep with severe lameness should be treated with parenteral antibiotic and it is only necessary to pare the foot after it has healed. It is important to tip sheep up to examine them. There should be separate handling areas for inspection and foot paring so that sheep which are uninfected do not acquire infection from the clippings. Clippings from parings are infective for one day. Paring does not prevent footrot. On many larger farms, contractors undertake foot paring of sheep. This may be undesirable, as they are inclined to pare more than is strictly necessary.

#### Footbathing

Sheep with footrot should be treated as a separate group. On most farms, a control strategy based only on regularly running all sheep through a footbath is ineffective

because of poor handling facilities. Environmental conditions throughout most of the year in the UK also favour the spread of the bacteria associated with footrot. However, instituting footbathing as part of a flock footrot control strategy may be worthwhile where handling facilities are of a very high standard and the sheep can be conveniently treated when gathered for dosing, dipping, etc.

The alternatives for footbathing are 3 per cent formalin as a walk-through bath or 10 per cent zinc sulphate for the sheep to stand in for up to 30 minutes (or as stated if a proprietary product is used). Cure rates of 50 to 80 per cent have been claimed for footbathing. It should be noted that many proprietary products that contain zinc sulphate incorporate a wetting agent to promote uptake of the zinc. Also, zinc sulphate solution can be recycled rather than drained away.

Effective footbathing requires:

- Walking through fresh 3 per cent formalin made up to the correct concentration or standing in 10 per cent zinc sulphate for 30 minutes or as directed;
- Walking through water first if the feet are dirty;
- Standing on dry concrete or stones after bathing;
- Choosing a dry day for footbathing;
- A move onto clean pasture (rested for five days).

Repeat treatments are necessary during the transmission period. A number of issues that veterinary surgeons and farmers should be aware of when using footbathing as a treatment method are discussed in the box below.

#### Antibiotic treatments

**Parenteral** Parenteral antibiotics are only recommended for clinical treatment. Animals treated with parenteral anti-

### Effectiveness of footbathing

There is evidence that footbathing is only effective if all the points listed in the text above are adopted. For example, it is probably a waste of time and effort to footbath if it is raining and the conditions are muddy. Straw placed in the footbath will render formalin ineffective but will reduce the foaming of zinc sulphate. Foam rubber mats for footbathing are as effective for sheep as they are for cattle. Do not alternate between formalin and zinc sulphate as formalin will harden the horn and so restrict the uptake of zinc.

biotics should be identified after treatment and those that fail to respond to a single injection should be culled. Parenteral antibiotics can be very effective for the treatment of under-running lesions of footrot and, by removing infective animals from the flock, the rest are saved from further challenge. Several antibiotics are suitable but penicillin-streptomycin combinations, at a higher dose rate than normally recommended, are often used to treat footrot. Depending on the environmental conditions, 90 per cent or more footrot cases may recover following a parenteral antibiotic injection.

**Topical** The workshop was divided over the benefit of antibiotic sprays but agreed that antibiotic footbaths should be restricted to the treatment of CODD and not used in the treatment of footrot. The disposal of antibiotic footbaths requires careful consideration.

### Therapeutic vaccination

Therapeutic vaccination is an alternative to an antibiotic injection and can be used in the face of an outbreak of footrot. Vaccination of the flock in the autumn is advisable if a high proportion of the flock is infected at that time and there is a history of attempts at footrot control failing due to wet land, susceptible breeds and inadequate handling facilities. A single dose of vaccine should result in a 20 per cent recovery among UK sheep breeds and two doses should give 80 per cent recovery. As a clinical response is seen in two to three days, vaccination can be an effective alternative to footbathing particularly where facilities are poor. Protection is obtained within three to four weeks. Vaccination used in conjunction with other treatments should break the cycle and is part of a good treatment programme.

### Segregation

An affected flock can be segregated into two groups: those infected and those not infected. This assists in the treatment of the infected sheep, reduces the disease challenge for uninfected sheep and helps the identification of non-responders for culling.

**Infected sheep** These should be separated into a hospital flock and walked through a footbath every five days. Continually lame sheep should be given an antibiotic injection or vaccine. Those sheep that fail to respond to this parenteral treatment and a total of three footbath treatments should be culled.

**Uninfected sheep** As not all infected sheep are readily identified, uninfected sheep should be inspected and pass through zinc sulphate or formalin footbaths whenever sheep are yarded for other purposes, such as worming. These sheep should walk out of the handling pens through the footbath. It is advisable

to walk the sheep through clean water first if their feet are dirty. It is not necessary to bring sound sheep into pens regularly for footbath treatment. Any affected sheep should join the infected group.

### CONTROL MEASURES

Regular footbathing every five days with zinc sulphate or formalin during transmission periods is only effective if the handling equipment is of high quality with hard standing (concrete or stones) for the sheep to stand on afterwards. Vaccination has a valuable role, particularly where the sheep handling facilities are inadequate. In the UK, the main transmission period is not known and may vary between areas and years. Probably, outside, during the winter in the northern and upland parts of the country, footrot persists in some sheep, but few or no new cases occur. In this situation footbathing every three weeks may control the disease. In the warmer and milder south and western parts of Britain, transmission may occur at any time of the year. Veterinary surgeons should base advice for their clients on their experience of the risk periods for flocks in their practice and direct flock owners towards regular footbathing or vaccination when appropriate.

### QUARANTINE

In Australia, sheep introduced to clean flocks are quarantined for a 'transmission period' and their feet inspected for virulent footrot. This is less relevant in the UK as 'clean' flocks are not recognised. For infected flocks it is important that animals are quarantined for at least four to six weeks following arrival or for as long as possible. During this time they should be treated for sheep scab and resistant worms. Every foot should be inspected for footrot. There is a danger of introducing CODD. Any lame sheep should have a diagnosis made and appropriate treatment given. The workshop recommended walking the quarantined sheep through formalin a number of times, for example, once every five days. Culling was regarded as an essential control measure for bought-in animals that fail to respond to treatment. If any sheep are found to be lame on arrival, they should be separated and the vendor informed to discuss the diagnosis, the cost of treatment and possible culling.

### TECHNOLOGY TRANSFER

The treatment and control of lameness should feature in flock health plans. The workshop considered that many farmers were not confident in the diagnosis of sheep lameness and had lost faith in the available treatments. There is evidence in the literature for the efficacy of footbathing with formalin and with zinc sul-

phate and for parenteral antibiotics but management systems and environmental conditions vary considerably. Further research into the role of parenteral antibiotics and vaccine under different systems in the UK is merited and may prove beneficial. There is a need to demonstrate effective treatments and to show that the economic benefits of control are worthwhile. Successful demonstrations could place peer pressure on farmers to take action.

The following action points were agreed:

- Establish the members of the workshop as the Footrot Advisory Group, with a follow-up meeting in 2004;
- The SAC, with the support of the Scottish Executive Environment and Rural Affairs Department (SEERAD), will attempt to apply the control measures on demonstration farms and assess the value of different control measures;
- Provide advice to sheep farmers through press articles, shows, evening meetings, etc;
- Provide training for vets (CPD);
- Define research requirements.

### ACKNOWLEDGEMENTS

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## Participants in the footrot workshop

The workshop involved veterinary surgeons from practice, veterinary laboratories, and research and industry, consultants in sheep health and production, and epidemiologists.

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