Lameness in Beef Cattle and Dairy Followers

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Foreword

This booklet describes the main aspects of lameness and outlines some of the common-sense management measures that will help prevent or treat it. If the advice is followed it should help ensure better welfare standards for the animals through a reduction in the level of lameness and at the same time help maintain or improve their efficiency of production.

Whilst the booklet embodies much of the latest scientific advice and the best current husbandry practices, it cannot be exhaustive and is not intended as a substitute for expert advice. If in doubt about a problem a veterinary surgeon or a technical or husbandry expert should always be consulted. Please remember that without good stockmanship animal welfare can never be adequately protected.

Please note that in addition to Beef Cattle this booklet also covers suckler herds, finishing and store cattle.
Introduction

Lameness is a common problem in all classes of stock. It not only results in pain to the animal but has economic importance throughout the beef and dairy industries. Lameness results in:

- Poor reproductive performance;
- Loss of production e.g. milk;
- Loss of weight and poorer growth rates;
- Premature culling;
- Increased veterinary and medicine costs.

Lameness can occur for a number of reasons including accident and injury, disease and infection. Poor husbandry and management may predispose to both.

The Welfare Code of recommendations for Cattle, paragraph 51, states that 'Regular attention should be paid to the feet of all classes of cattle'.
Types of Lameness

The following paragraphs describe the common types of lameness. They are not in any order of importance.

Laminitis

Laminitis is the acute or chronic inflammation of the laminae which lie immediately below the outer horny wall of the foot, resulting in great pain to the animal. The condition may be caused by traumatic, septic or toxic factors.

There appears to be an association between feeding high concentrate diets and the occurrence of lameness due to laminitis. Research has not fully established all the links between nutrition and subsequent related lameness, but major changes of diet for cows at calving, heavy feeding of concentrates after calving and high proportions of cereals, e.g. barley, in the diet are all thought to be predisposing factors to laminitis.

The risk of lameness problems related to feeding can be reduced by correct rationing and forage analysis. The guidelines that should be followed to minimise the risk are:

- Ensure adequate forage to concentrate ratio in the diet;
- Do not feed more than 4kg compound at any one time;
- Allow adequate feed space per animal;
- Introduce animals to a high energy diet gradually;
- Check fermentation quality and acidity of silage through analysis before feeding;
- Provide adequate comfortable lying areas and clean bedding to encourage animals to lie down;
- Avoid excessive stressful activity for cattle.

In the beef industry, the condition of laminitis is seen mainly in the 'Barley Beef' systems where a high concentrate to forage ratio is fed in the diet. Cattle 4.5 - 6 months old seem to be the most susceptible.

Diseases Causes by Mineral Deficiencies and Imbalances

Though not a common problem, disease such as rickets can cause lameness and in individual cases the effects can be severe. Diseases caused through mineral deficiencies and imbalances can be avoided by attention to diet formulations.

White Line Disease

This disease is the most common form of lameness in yarded cattle, especially on slats. The white line is the junction between the sole of the hoof and the wall. It can be seen running around the border of the sole and appears as a slightly pale area than the rest of the horn. Cracks in this white line can allow dirt and bacteria to enter the sensitive structures causing abscess formation, pain and lameness. This most commonly occurs on the outside of the outer claw of the hind foot and takes the appearance of a dark crevice or crack which can be
traced down to the sensitive structures of the hoof, often with the appearance of a small amount of pus.

Excessive activity on poor underfoot surfaces can predispose animals to a high incidence of this disease. Research has shown that restrictions of trough space in yared beef cattle can also lead to a high incidence.

In order to prevent this condition, attention must be paid to stocking density, available trough space and the suitability of flooring (see section on slatted floors).

**Foul of the Foot**

Foul of the foot is an infection caused by a bacterium, *Fusobacterium necrophorum*, entering the tissue between the digits of the foot, through a wound or devitalisation of the skin. It results in an acute and painful inflammation of the interdigital subcutaneous tissues. On examination of the foot, pain is caused by putting pressure on the skin of the interdigital region and there is usually a foul odour - hence the name.

The condition is one of the more common causes of lameness in young stock and fattening cattle and can affect 2% - 5%.

Adverse conditions such as hard dry ground or very muddy wet areas, such as gateways or around feed areas, predispose to this condition.

To prevent foul of the foot in indoor units, management of the condition is needed to prevent the spread of the disease. This includes:

- Regular foot-bathing with a 5% formalin solution which reduces the number of cases;
- The use of paraformaldehyde crystals mixed in the bedding has been claimed to reduce the incidence of cases in cattle in straw yards;
- Seek veterinary advice.

**Joint-Ill**

This is a condition found in calves by an infection in the umbilicus which then spreads to the joints of the limbs. Common causative bacteria are *E. coli* and *Streptococcus* which are found in great numbers in damp, dirty bedding. It causes severe lameness in young calves usually only affecting one or two joints. The disease shows itself often by swelling of the front legs and needs early veterinary treatment.

Calves are at a greater risk from the condition if they have low levels of immunity due to inadequate intake of colostrum in the first few days of life.

To reduce the incidence of joint-ill:

- Provide clean dry bedding in the calving shed and calf house;
- Ensure that all calves have consumed and adequate intake of colostrum in the first 24 hours of life, particularly in the first 6 hours;
- Dress the umbilical cord (navel) at birth with a strong iodine solution or antibiotic aerosol;
- Clean and disinfect calving accommodation frequently.
Accident and Injury

Slatted Floors

The most common cause of traumatic lameness in cattle housed indoors is injuries occurring on poorly maintained or incorrectly installed slats.

Surveys show that the incidence of lameness in cattle housed indoors is injuries occurring on poorly maintained or incorrectly installed slats.

Slatted floors are not suitable for cattle under 250kg liveweight and cows must not be housed on fully slatted floors.

The Welfare Code for Cattle recommends that 'All floors particularly slatted ones, should be designed, constructed and maintained so as to avoid discomfort, distress or injury to cattle. Remedial action should be taken if any of these occur'.

The construction and installation of slats should be to a high standard. Grids of 5 - 7 slats are often more accurately laid than individual ones. For finishing beef cattle the recommendations for slats are as follows:

<table>
<thead>
<tr>
<th>Minimum width of slat</th>
<th>125m m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum width of gap between slats</td>
<td>40m m</td>
</tr>
</tbody>
</table>

Slats must be laid level and should not be too smooth to reduce the risk of injury due to slipping. Research into slats for beef cattle has shown that the occurrence of injuries on slatted floors are complicated by other factors such as:

Cubicle Housing

The incidence of lameness is higher in suckler cows housed in cubicles compared to straw yards. It is important that the correct length of the cubicle (and kerb) is installed in order to minimise the chance of injury resulting in lameness. Recommendations for cubicle dimensions are:

<table>
<thead>
<tr>
<th>Liveweight (kg)</th>
<th>Length (m)</th>
<th>Clear width between partitions (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 - 150</td>
<td>1.2</td>
<td>0.6</td>
</tr>
<tr>
<td>150 - 250</td>
<td>1.5</td>
<td>0.75</td>
</tr>
<tr>
<td>250 - 375</td>
<td>1.7</td>
<td>0.9</td>
</tr>
<tr>
<td>375 and above</td>
<td>2.1</td>
<td>1.1</td>
</tr>
</tbody>
</table>
General comments on floors

Lameness due to muscular strains in the upper leg can occur on slippery floor surfaces;

- Adequate bedding and regular cleaning out of pens and walkways is required to minimise the chances of these injuries.
- Where the surface of the floor has become smooth it should be treated using a concrete cutting tool.
Lameness in Stock Bulls

The average working life of a bull in the suckler herd is only 3 mating seasons. Given the high purchase price of a stock bull this is not sufficient to cover his cost. The working life of the bull is often ended prematurely by lameness caused by incidents.

The most common problem is overgrown feet. Overgrown feet predispose the bull to injury adversely affecting his mounting ability and hence reducing the fertility performance of the herd. For a bull to mate properly it is essential he has sound feet and legs.

Correct foot care of the bull is essential but foot trimming in bulls is often neglected due to difficulties in handling. If foot care is neglected lameness will occur and will progressively worsen. Routine foot trimming should be considered as essential, but the length of time between treatments will vary between individual bulls. All bulls should have their feet checked once a year but more frequent inspections may well be necessary if the bull has a history of bad feet. A foot trimming crush is needed to handle the bull safely and securely or it will be necessary to employ the services of a professional foot trimming contractor or veterinary surgeon.
General Conclusions

Foot Bathing
Walk-through and stationary foot bathing are satisfactory techniques for reducing the incidence and spread of foot infections such as foul of the foot. Solutions of either 3-5% formalin or 5 - 10 % zinc or copper sulphate are most commonly used.

Foot Trimming
In order to minimise the risk of foot damage and secondary infection due to misshapen and overgrown hooves, regular foot trimming of cattle is essential. This should be carried out at least once a year or more frequently when necessary by a skilled stock person or veterinary surgeon with the animal properly restrained.

This also allows for examination of the feet and early diagnosis of problems and maintains even claw growth and a balanced stance.

Housing
The incidence of lameness can be reduced by using straw bedding. Soft bedding encourages cattle to lie down and reduces the risk of traumatic laminitis. Soft bedding such as straw or sawdust is also essential to house lame cattle on to reduce the risk of secondary injuries to the legs.

Nutrition
Correct diet formulation is needed to ensure that forage to concentrate ratio is satisfactory and there are no mineral imbalances. This is particularly important in young calves where good bone development and growth is essential for the long term productivity of the animal.

Breeds
There appears to be no evidence that particular beef breeds are more susceptible to lameness than others. Some later maturing breeds such as Charolais, are however housed longer than early maturing breeds such as the Hereford so are more likely to suffer injuries and lameness problems.
Remember

Any injured, ailing or distressed animal should be treated without delay and veterinary advice sought when necessary. Provision must be made for the segregation and care of seriously sick and injured animals. When the lameness is so severe that the animal has to be destroyed on the farm, this should be done humanely, and, where possible, by a person who is experienced in both the technique and the equipment used for slaughtering the animal.
Further Advice and Information on Animal Welfare

For general advice on prevention and cure of lameness and for advice on specific cases - consult your veterinary surgeon. General welfare advice on lameness may also be obtained from:

- The State Veterinary Service (Local Animal Health Office - address and telephone number in your local telephone directory)
- Specialist consultants

PB No. Title
0621 Farm Fires: Advice on Farm Animal Welfare
1147 Emergencies on Livestock Farms
2594 Explanatory Guide to the Welfare of Animals (Slaughter or Killing) Regulations 1995
0074 Codes of Recommendations for the Welfare of Livestock (Cattle)
4020 Lameness in Dairy Cattle
6491 Condition Scoring of Beef Suckler Cows and Heifers
6492 Condition Scoring of Dairy Cows

If you would like any further information or advice relating to this code please contact DEFRA’s Animal Welfare Division on 020 7904 6512.

DEFRA (Department of Environment, Food and Rural Affairs). Further copies of this publication are available from: Defra Publications, Admail 6000, London, SW1A 2XX, Tel: 0845 955 600.

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