Lameness in Pigs

PB1148
1992.

Contents

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.

Introduction

The extent of lameness in pigs and the cost to the industry as a whole has not been fully assessed but is considerable. The consequences of lameness can be seen in all stages of production and its prevention not only benefits the pigs but can result in economic benefits to the pig producer.

In 2002 the Scottish Agriculture College carried out a survey to assess the extent of foot-rot in Scottish flocks. The survey showed that more than 90% of sheep flocks had experienced cases of foot-rot in the previous year.
Lameness is a major challenge for sheep farmers, both to sheep productivity and sheep welfare. It should be remembered that lameness may be the first sign of foot-and-mouth disease in a flock. Early and accurate diagnosis of the cause of lameness ensures the correct treatment and preventative measures and will prevent unnecessary suffering.

A written health and welfare plan, which covers the yearly production cycle, should be prepared for each flock. This should be developed with appropriate veterinary and technical advice and reviewed and updated annually. The plan should assess vaccination policy, control of internal and external parasites and foot care as a minimum. Pasture management should form an integral part of disease control, especially in the case of internal parasites and foot-rot. Identification of high-risk periods for disease will encourage quick implementation of control strategies. All personnel attending to the flock should be acquainted with the contents of the flock health and welfare plan in addition to the current Code of Recommendations for the Welfare of Sheep.

Types of Pig Lameness

There are four main causes:

- Genetic causes
- Congenital causes
- Physical injury
- Infection

In all types of pigs, problems can occur as a result of inherent leg weakness, physical injury or infections.

Genetic causes:

Leg weakness due to genetic causes is not common in the UK, though there is some evidence that selection for faster growth has increased the problem. It is thought that growth and development of the bone does not keep up with muscle deposition, resulting in an increased susceptibility to injury. Defects in conformation, e.g. straight legs, uneven claws, may also lead to lameness.

Congenital causes:

The major congenital cause of lameness is splay-leg in sucking piglets. This condition is complex and not fully understood. Thus it has proved difficult to incorporate its eradication into breeding programmes. It appears that occurrence of splay-legs increases with litter size and that males are twice as likely to be affected as females. Breed can be an important factor with piglets from Landrace and Pietrain sows in particular having a higher incidence than Large White.

Physical injury:

Inappropriate or poorly maintained floors are the most common causes of physical injury. The effects are either wounds directly to the foot or damage to the joints, ligaments or muscles caused by pigs slipping on the floor surface. Fractures are not always obvious. Fighting and sexual behaviour (mounting) within a group of pigs can lead to an increase in the incidence of injuries in general, including those leading to lameness, particularly if the floor is in poor condition.

Infection:

Diseases such as joint ill in piglets and infectious arthritis lead to lameness. Infections also occur due to bacteria entering a wound after physical injury resulting in swollen joints and abscesses. Mycoplasmal arthritis is common in young breeding stock.

Effects of Pig Lameness

The general effect of lameness is pain and suffering for the animal. This leads to reduced mobility resulting in an inability to compete with pen mates for feed, water and space and interference with mating.

In all types of pigs, lameness leads to increased veterinary costs and extra management requirements.

Breeding Pigs

Sows:

It is estimated that 10-12% of sows that are culled each year leave the herd because of leg problems. These include:

- the ability of a lame sow to stand for a boar;
- reduced agility, which increases the risk of piglet mortality due to overlaying;
- predisposition to urinary and genital infections.

Increase culling rates lead to:

- increase costs for replacement gilts;
- reduced overall herd performance due to a higher farrowing index;
- lower average litter size because sows are culled before they reach peak proficacy.

Boars:

Lameness is also a cause of culling for boars due mainly to an ability to remain mounted during mating. The consequences are the increased costs of replacement and overwork of the remaining boars, leading to lower conception rates.

Growing Pigs

It is estimated that the incidence of splayleg in the British National Herd is 0.45% with approximately half the affected pigs dying. Affected piglets cannot compete with their litter mates for a teat and are at an increased risk of being trapped under the sow when she lies down.

Poor floor surfaces in the farrowing accommodation can damage piglets' knees as they compete for milk, often leading to infected joints.

In growers and finishers, lameness reduces mobility and the ability to move to feed and water. This results in reduced growth rate.

After slaughter, lameness causes condemnation of parts of carcasses, mainly due to arthritis and abscesses. The value of the meat lost because of this alone is estimated at 10p/finished pig. This could cost the industry up to 1.5 million per year.

Management & Prevention of Pig Lameness

HOUSING

Solid Floors - Construction and Maintenance

All floors must provide adequate grip to prevent slippage whilst not causing physical injury or excessive abrasion to the feet or legs.

All floor surfaces become increasingly slippery when they are wet or covered in manure. Surfaces should be kept dry either by good drainage or by the use of bedding to soak up the liquid. They should also be capable of being thoroughly cleaned and disinfected to prevent the build-up of disease organisms. The appropriate grade of mortar needs to be used in the surface screed to resist the corrosive effect of urine and certain liquid by-product feeds as well as the frequent use of the power washer. In lying areas where frequent heavy scraping is not a problem, a wood float finish is generally adequate. However, dunging passages are often wet and the effect of regular scraping causes smoothing resulting in a very slippery surface. In these areas, floors should be laid using a rounded tamped finish, which provides adequate grip without being severe enough to cause physical foot damage.

Solid floored farrowing accommodation can be a particular problem where good grip is required by the sow, whilst a smooth surface is required by the piglets to prevent leg damage while sucking. The cement screed mix must include a minimum of water with natural non-abrasive sand. The surface should be laid and finished with a wood float but must not be over worked. Rubber mats may be placed in farrowing accommodation to prevent damage caused by rough or worn floors. Thorough cleaning and disinfection of floors between farrowing helps to reduce levels of joint infections in piglets. Rescreeding of floors should be undertaken when surfaces deteriorate. Where scraped dunging passages have become smooth, the surface of the floor should be treated using a concrete cutting tool or with chemical abrasives.

Slatted Floors

Slats are not recommended because they cause more injuries than bedded pens and therefore are less acceptable from a welfare point of view. The main objective of using slatted floors is to support the pig whilst providing gaps of sufficient size between the slats to maintain cleanliness. When used, slats should provide adequate grip to avoid slippage whilst minimising the abrasive effect on the pig's feet. If slats are used then bedding should also be provided wherever possible since its cushioning effect helps to prevent lameness.

An important aspect of slatted floor design is the width of the solid area and the width of the gap in relation to the size of the pig it is designed for. For piglets, the solid part of the slat should be wide enough to prevent claws falling either side of the slat. For sows on concrete slats, the solid area should support the whole of the foot, although on metal slatted floors where the gaps are smaller, several narrow bars will be adequate.

The following table can be used as a guide to the width of slat and gap in relation to the size and type of pig:

	Width of slat (mm)	Gap size (mm)
Farrowing sows and piglets (up to 30 kg)	18 - 25	8 - 11
Finishers (up to 100 kg)	60 - 100	10 - 20
Sows, Boars and Finishers (over 100 kg)	80 - 100	10 - 25

Slat edges should be rounded, not sharp or chipped. Where slats of any material become damaged or uneven, the slat must be replaced. New slats should match the original to avoid gaps.

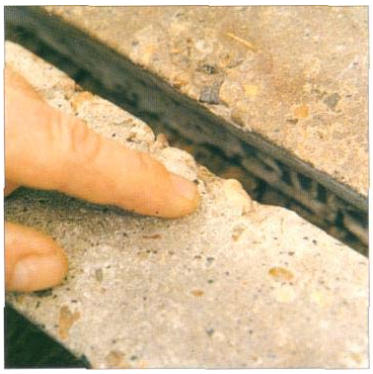
Concrete slatted floors suffer many of the problems of solid floors. In particular, surfaces have to withstand the combined effects of urine, power washing and pig movement, which increases the problem of slipperiness when wet. Furthermore, the slat edges wear and crack resulting in sharp, rough areas, which significantly increase the risk of foot damage. Single slats must be well fixed down as they can be lifted by pigs.

Metal slatted or mesh flooring is available in a wide variety of forms, which vary considerably in the degree of grip and comfort they provide. A major problem with metal floors occurs when excessive wear or rusting causes the surface to break leaving sharp edges which inflict direct damage to the pig's foot. This is often first seen beneath drinkers or wash bowls. The use of cast iron or galvanised slats prevents the problem and provides a longer life.

Plastic slatted or plastic coated metal flooring is also available in a wide variety of forms. The surfaces tend to be kinder to feet so they are particularly suitable for younger pigs. However, they can be very slippery, especially when wet. Using those types that incorporate profiling will reduce this problem.

Steps

Steps between floors can be a cause of injury either from sharp edges or from pigs losing their grip. They should be avoided where possible particularly:



- in the service area where good grip and freedom from obstruction is essential;
- where a sow has to back out of a stall or farrowing crate;
- Where a step cannot be avoided the height should be as small as possible. As a guide, 100mm might be used for breeding stock or finishing pigs whilst 50mm would be more suitable for weaners.

In some deep bedded pens, large steps are common in the feeding area. These steps should be deep enough for the pig to be able to stand on them completely when feeding. These large steps should be replaced by slopes or, where possible, intermediate steps of sufficient depth added. In all cases, the edges should be rounded and repaired swiftly when damage occurs.

Equipment

Equipment in pig pens such as gates, pen divisions, farrowing crates and feeders can be important causes of injury if poorly designed or maintained. Damaged metal-sheeted gates are a very common cause of injury. All broken or worn equipment must be replaced or repaired immediately. Nuts and bolts must not protrude into the pen and any sharp edges should be rounded off.

All gaps either beneath or between pen divisions and gates should be large enough to avoid legs being damaged whilst being small enough to prevent heads being trapped. Gaps between sharp metal edges and the floor will damage hooves and dew claws and must be avoided. These faults are seen commonly in feeding and weighing crates, and at the edges of metal mesh floors.

Bedding

Bedding has a positive benefit in terms of lameness due to its physical cushioning effect and should be used wherever possible. Bedded areas should always be kept as dry as possible as continuous contact with wet bedding can lead to a softening of foot tissues predisposing the foot to damage and bruising which can in turn allow infection to enter the foot.

In deep-bedded systems, problems can arise with the overgrowth of claws of sows and boars due to a lack of abrasion. When kept in these circumstances, it is recommended that pigs have some access to sound concrete areas to provide abrasion for the hooves.

OUTDOOR HERDS

Lameness in outdoor sow herds will be minimised by an appropriate choice of site. When selecting the site the most important factors are:

- a free draining light soil;
- freedom from excessive stone levels;
- in a low rainfall area.

Those you should avoid include:

- stony soils and thin soils over rock, especially those containing flints as they can cause direct damage to legs and feet allowing infection to enter and;
- heavy soils as continuous wet muddy conditions can lead to a softening of the foot tissues predisposing the animal to injury and infection.

Stockmanship

REPLACEMENT OF BREEDING STOCK

The careful management of young gilts and boars as they are introduced into the herd can help reduce problems and hence early culling. Gilts and boars should be housed in warm draught-free pens with sufficient space and clean, dry bedding. Exercise areas will help limb development. Floor surfaces should provide adequate grip, should be sound and, if possible, without steps.

After purchase, boars should be housed individually in a suitable pen. Gilts should be housed within sight and smell of a boar and be provided with plenty of space as there will be a lot of activity as they come into oestrus. Infectious arthritis (mycoplasma) is common at this stage and early treatment is essential to prevent chronic joint problems. Veterinary advice should be sought.

SERVICE MANAGEMENT

The sensible matching of boar to sows and constant supervision are important in reducing the risk of injury to the animals at this time where activity and physical contact is greatly increased.

Large boars should never be used on small sows or gilts. A young boar should only be used on gilts or young sows, which should never be allowed to bully him.

AGGRESSION

In group housing systems, lameness due to aggression between pigs is difficult to eliminate. The mixing of pigs should be minimised but, where this is carried out, allowing plenty of space and adding bedding as a distraction will help reduce the problem.

Aggression is often associated with feeding and the system must be appropriately designed and properly maintained to avoid this problem.

Nutrition

A wholesome ration appropriate to the type of pig and unrestricted access to clean drinking water is essential to ensure the health of the pigs. Leg weakness can be minimised by including minerals in the diet to ensure adequate levels of calcium, phosphorus, and vitamins, particularly biotin.

CALCIUM AND PHOSPHORUS

These are essential for maximum bone mineralisation. The common ingredients used in pig diets do not normally supply adequate quantities so supplementation of diets is necessary. Current recommendations for minimum requirements of calcium and phosphorus are given in the following table in terms of grams per kilogram for growing pigs and grams per MJ digestible energy in sow rations:

	Calcium	**Phosphorus**
Up to 20kg	10.77	8.81g/kg
20 - 55 kg	8.81	6.85g/kg
55 - 90 kg	7.83	5.87g/kg
Sows	0.65	0.5g/MJDE

BIOTIN

Research has shown that supplementary levels of biotin in diets can increase the hardness of hoof tissue and prevent foot lesions. Recommended levels of biotin supplementation on pig diets are:

	ug/kg
Creep	200
Weaner	150
Grower	100
Finisher	50 - 100
Sows	200

Biotin can be given in much larger quantities to aid the healing of existing foot damage.

Treatment for Pig Lameness

Where any doubt exists over treatment or the pigs do not respond to the stockkeeper's care, a veterinary surgeon must be consulted immediately. Infections caused by injuries should also be treated under veterinary supervision.

The daily observation of stock must include the identification of any leg or foot problems. Pigs must be made to move around the pen, as lameness will not be seen if they are lying down.

Depending on the severity of the problem, lame pigs may need to be isolated from their pen mates. They should be housed in warm, draught-free pens with dry deep bedding. The floors of these pens should be dry, provide adequate grip and be free of steps and rough edges. It is essential to ensure that adequate feed and water are supplied and that the pigs can reach them.

Techniques such as foot bathing and paring may prove helpful for severe cases of lameness. Paring should be carried out by a skilled stockperson or veterinary surgeon.

Where lameness does occur, the pen should be examined for any rough or sharp edges that could have caused injury and repairs carried out as necessary.

Remember

Any injured, ailing or distressed pig 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 a pig 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 pigs.

Further Advice and Information on Animal Welfare

- For advice on pig welfare and on any outbreak of disease consult your veterinary surgeon.

General advice on pig welfare may also be obtained from:

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

Other publications available from Defra that may be of interest:

PB No.	Title
0621	Farm Fires: Advice on Farm Animal Welfare
1147	Emergencies on Livestock Farms
0074	Codes of Recommendations for the Welfare of Livestock (Cattle)
1381	Guidance on the Transport of Casualty Farm Animals
1875	Condition Scoring of Pigs
5162	Codes of recommendations for the welfare of livestock: pigs (England)

If you would like any further information or advice relating to this code please contact DEFRAs 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.