

Cut the cost of lameness

Biotin and regular foot bathing are key to reducing disease incidence

What are the true costs of lameness and what can producers do to tackle the disease and reduce these costs to their business, their herd and individual cows? Feed company John Thompson & Sons spoke to a leading cattle lameness vet to share some views.

The costs of lameness, in the form of decreased yields, poor fertility and increased culling, are huge for individual dairy herds and there's also a price for individual cows in terms of pain and poor welfare. "Towards the end of the winter the number of lame cows in herds often increases and when they are turned out in the spring they are expected to walk, often quite long distances, to and from pasture," says Gloucester-based cattle vet and renown lameness specialist Roger Blowey.

In an EU study involving more than 1,800 lame cows, it was shown that yields decreased by 570 litres for a sole ulcer, and 370 litres for a white line abscess, and that cows treated for digital dermatitis experienced an increase in yield. "In both studies the reduced yields could be detected from between two and four months before lameness was diagnosed, strongly suggesting that the initial changes that produce lameness take some while to work themselves through the foot," adds Mr Blowey.

"A more complete understanding of the foot and what goes wrong will help us to prevent further losses," he explains.

The hoof is produced by the corium, or 'quick' and grows at a rate of 5mm per month. If the corium is damaged, then a mixture of blood passes through the horn to the weight bearing surface. When it reaches the bearing surface it allows debris or bacteria to penetrate back into the corium, causing lameness.

On-farm factors

The four major factors leading to damage of the corium, and the subsequent production of poor hoof and lameness

are calving, excessive standing, poor nutrition and husbandry and general herd management.

At calving horn growth slows down and almost stops so any horn formed is of poorer quality, and the rate of wear increases. During the two weeks prior to calving up until two weeks after calving, there is excess movement of the pedal bone within the hoof, leading to further damage to the corium. "This also results in the production of poor quality hoof and it is this that leads to lameness due to sole ulcers and white line disease some two or three months later," explains Mr Blowey.

Cows stand to be milked, stand to feed, stand to drink and stand for social interactions. The majority of social interactions occur during the first few days after cows are first grouped, where there are approximately 10 aggressive interactions per hour for the recently mixed animal. The high-yielding cow has to stand to eat for between six and eight hours per day and longer than this will be required if there is inadequate feed space – less than 60cm per cow.

"I am not in favour of cows being made to stand for half an hour at the end of milking," says Mr Blowey. "Milking times should be examined to make sure that cows are standing for the minimum time possible. Fresh calvers are particularly susceptible to long standing times and running them as a separate group could help to minimise standing times."

To encourage cows to lie down, cubicles should be comfortable and allow freedom of movement.

And even where mats and mattresses



Hoof complaints are more common at turnout

are used, bedding is vital. Approximate bedding quantities recommended on mats are 1kg of sawdust or 1.5kg of straw. On concrete beds the amount of bedding should increase to 2kg of sawdust, 2-3kg of straw, and 8kg of sand.

Heifers should be reared in cubicles so that they know what to expect after calving. They should be reared at least partly standing on concrete so that after calving they have learnt how to walk on concrete.

Good nutrition

Thompsons' ruminant specialist Richard Moore also believes there are clear links between nutrition and lameness.

"It is important to avoid acidic diets that result in rumen acidosis because this reduces the rate of biotin synthesis. Biotin has been shown to be important in the production of better quality hoof, particularly within the white-line cement," says Mr Moore. "In older cows, where the rate of white line disease is higher, studies have shown that supplementation of the concentrate with biotin to provide 20mg per head per day can produce almost a four-fold reduction in the incidence of lameness caused by white line disease."

He says that the overall balance of the diet, as well as ration preparation and presentation, are particularly important. Two big concentrate slugs, say more than five kilograms per milking, will depress rumen pH and initiate rumen acidosis along with laminitis and should be avoided – particularly with acidic, wet grass silages. Move to a mid-day feed to reduce the acid load and/or move to a ration based more on digestible fibre, such as soya hulls, sugar beet pulp or citrus if acidic forage is an issue.

Within a diet feeder situation look out for ration sorting and again with particularly wet or dry forages and in two batch systems where an excess of 10kg of concentrate is being fed to a high yielding group through the wagon. Extensive sorting will also allow a cow to

consume in excess of her concentrate allowance in a specific time period with the same knock-on effects on rumen pH.

Structural fibre

Straw incorporation in the diet is important to provide structural fibre and NDF but more important is its consistent consumption. Straw should be added to the wagon first and then chopped to a length of between 2.5 and 5.0cm to achieve good incorporation and to ensure that all cows consume the formulated amount day in day out.

Digital dermatitis is essentially 'mastitis of the feet', according to Mr Blowey. And, like mastitis, it should be controlled through sound environmental hygiene, regular disinfection, and treatment of clinical cases to remove the reservoir of infection.

"Disinfectant foot baths should be used at least on a daily basis," says Mr Blowey.

"Use of occasional antibiotic baths is fine for the treatment of digital dermatitis, but if each case of the disease treated increases yield by a litre per cow per day, there is no logic in allowing cows to develop it in the first place. It is likely that you will get a greater economic benefit from foot bathing than any other change you make on your farm."

Cows need to go through the foot bath – containing 4% formalin or 4% copper sulphate or other proprietary products – every day. "The foot bath should have a firm, comfortable base. The bath solution should be changed after every 250 to 300 cows, although the frequency of change will vary with the degree of contamination of the feet as they enter the foot bath."

Further information on lameness and its prevention is available from Thompsons and in 'A Veterinary Book for Dairy Farmers' or 'Cattle Lameness and Hoofcare'.

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