



# A study into lameness in sheep at Riseholme Farm

Logan Newstead

14581359

Supervised by Dr Simon Clegg

School of Life Sciences

## INTRODUCTION

Footrot is an infectious disease that is endemic to sheep in Great Britain. It typically presents as interdigital dermatitis with lameness and a characteristic foul odour, and can progress to the eventual separation of the hoof from the skin. The condition has serious welfare and economic implications, costing the UK farming industry upwards of £30 million per year. Footrot is caused by the bacteria *Dichelobacter nodosus*. Prolonged exposure to damp conditions is also strongly implicated in the pathogenesis of the disease, as is previously existing damage to the hoof, as this allows the bacteria to colonise the skin and invade the subcutaneous tissue. Co-infection with the ubiquitous bacteria *Fusobacterium necrophorum* is also a risk factor for the development of footrot; this pathogen releases toxins which cause necrosis of the subcutaneous tissue, allowing *D. nodosus* to enter and cause infection.



Image 1. A hoof with an active footrot infection

The aim of this study was to evaluate the effectiveness of an antimicrobial spray as a treatment for footrot.

## METHODS

A flock of 193 lambs aged 4-6 months were gathered, weighed, body condition scored (on a scale of 1-5, with 1 being very underweight and 5 being very overweight), lameness scored (from 1-5, with 1 being normal and 5 being totally unable to weight bear), and feet were examined to identify signs of footrot.

Of these lambs, 44 were identified as being lame and were isolated. 24 of these had an active infection and were viable candidates for the treatment.

On day 1, the lambs were flipped to identify infected feet. The feet were cleared of any debris and treated by spraying between the digits and the top and bottom of the hoof. Swabs and photographs of the affected feet were taken.

Feet were checked on day 2, re-treated as above on day 3, monitored on days 4-6, and treated once again on day 7, with further monitoring until day 10. Hoof trimming was carried out where necessary. On day 10 a final lameness score was given.

## RESULTS

The infection was completely cleared in 83% of the sheep treated.

Lameness score decreased by an average of 3 points. There was no obvious relationship between lameness score and body condition score or weight.

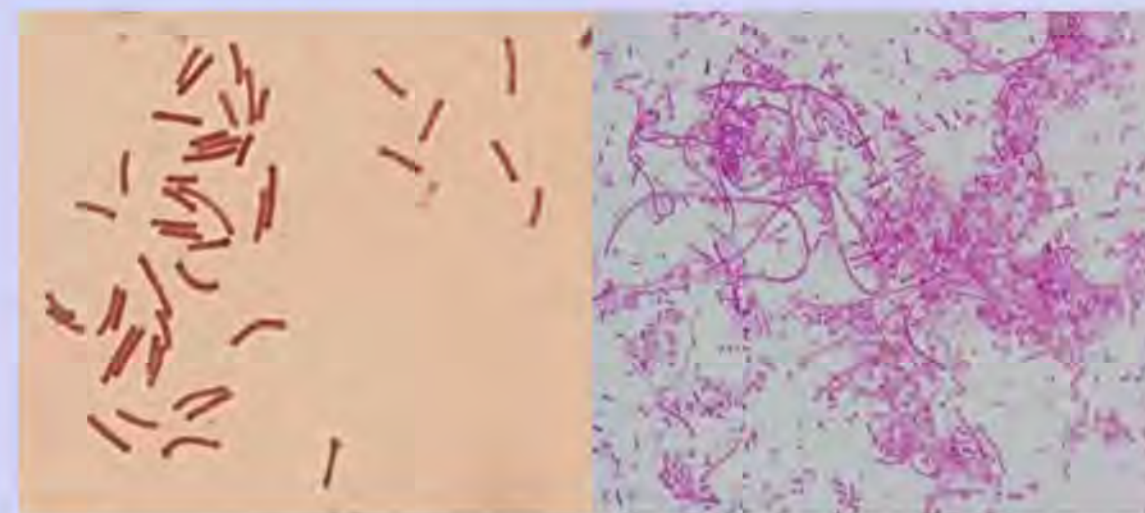


Image 2. *Dichelobacter nodosus* and *Fusobacterium necrophorum*, the two organisms most commonly associated with ovine footrot.

Decreased lameness score

Decreased suffering

Increased welfare



Figure 1. 20 sheep (shown in white) of the 24 treated were free of infection by the end of the trial.



## DISCUSSION

With up to 90% of farmers in the UK reporting that footrot has affected their flock, it is essential that an efficient, effective way to cure and prevent the condition is found. Although the study has limitations, the early research into the effectiveness of this product as a treatment is promising.

Typical footrot treatment and prophylactic measures include isolation, hoof trimming, footbathing, antibiotics and vaccination. Many of these methods are costly, time consuming and impractical. This treatment works as rapidly, if not more so, than antibiotic treatments, which typically take 10 days or longer to clear the infection. Most antibiotic treatments also require a dry environment for up to 24 hours after application; this was not provided in this trial with no apparent implications on the effectiveness of the treatment.

This treatment is not an antibiotic, meaning bacteria cannot develop resistance to it. This is a key factor to consider when developing new treatments due to the increasing threat of antimicrobial resistance.

Although hoof trimming is recommended alongside topical treatment, this product as a footbath solution could be efficient and effective as a treatment for footrot in sheep.



UNIVERSITY OF  
LINCOLN

Lincoln Academy of  
Learning and Teaching

**UROS**  
FUNDED