

# Eradicating virulent footrot using specific vaccines

## factsheet

### Key messages

- Eradication of virulent footrot is possible where producers can reduce disease prevalence to a level where remaining affected sheep can be culled from the mob.
- Specific vaccines can be used to treat known virulent footrot strains and reduce disease prevalence.
- Producers using specific vaccines need to know which strains are present in their flock and be vigilant in their approach to disease eradication and ongoing management.
- Ongoing flock monitoring and on-farm biosecurity are critical to keeping footrot at bay post eradication.

### Introduction

This fact sheet summarises the process of eradicating virulent footrot using specific vaccines.

Virulent footrot causes significant production loss and animal welfare issues in affected flocks.

Producers can eradicate footrot if they can reduce disease prevalence to a level where all remaining infected sheep can be culled.

Foot paring and/or footbathing or antibiotic treatment can reduce the prevalence, and, if followed by repeated foot inspections and culling of all infected sheep during a non-transmission period, result in eradication.

Specific vaccines can also be used to reduce disease prevalence.

### What are specific vaccines?

A specific vaccine is a custom-made vaccine that targets the strains of footrot present on your property.

There are many strains of the footrot bacteria. While vaccines can be produced that target multiple strains, the efficacy of the vaccine is reduced if more than two strains are incorporated.

A vaccine containing only one or two strain vaccine causes the sheep to produce much more immunity to each strain than a 10-strain vaccine (which is not available at present anyway) and much higher cure and protection rates can be achieved.



*Identification: The top image shows an infected toe at left and healthy toe at right. The bottom image shows a pared back foot ready for footbathing.*

### Specific vaccine research

A University of Sydney research project started in Tasmania during 2007, using specific vaccines in four medium-sized flocks. One flock with only two virulent strains eradicated the disease promptly. The other three flocks had multiple strains and have now eradicated most of the virulent strains.

Currently DPIPW is hosting a number of on-farm trials to see whether large properties can eradicate footrot with veterinary practitioner support. There are 20 properties in the trial, 10 are control properties and 10 are treatment properties.

### Keys to successful footrot eradication

1. The property manager must be confident that once eradicated, footrot can be kept out through rigorous biosecurity measures.
2. The veterinary practitioner collects scrapings from up to 20 sheep, representing different age groups and mobs.
3. Mt Pleasant Laboratories cultures (grows) the footrot bacteria from the scrapings and sends 10 isolates (samples) to University of Sydney to determine virulence and strain type (this takes about 2 weeks and costs about \$200).

4. University of Sydney grows the isolates and tests for virulence and strain type (this can take up to four weeks and costs about \$3000 for 10 isolates).
5. If the property manager decides to proceed with vaccination, an order for the number of doses required is sent to University of Sydney.
6. University of Sydney produces the vaccine (one or two strains per batch) and sets up efficacy and safety trials on a small number of sheep. This takes about four weeks and costs about \$2.12 per dose (\$4.24 for a full course of two shots).
7. After the trials are completed, enough vaccine to treat the whole flock is supplied to producer.
8. The producer vaccinates all sheep on property — apart from prime lambs and culls that can be identified and kept separate. This vaccination course is best completed before the spring disease spread (transmission) period or held over until weaning.
9. Four weeks after the initial vaccination, a booster shot is given. It is important the time between vaccinations does not exceed six weeks (the first vaccination must be timed so the booster can be given within the six-week time frame).
10. Vaccinated ewes will give some 'passive' immunity to their lambs, but this will only last eight weeks. Lambs can be vaccinated at marking, or footbathed to keep the prevalence low until weaning.
11. If there are more than two strains present in the flock, the process must be repeated, starting eight weeks after the booster shot of vaccine containing the first two strains.
12. Four weeks or more after the last vaccination, the producer needs to start inspecting feet. These inspections need only involve enough paring to diagnose whether the sheep is still infected with footrot or not.
13. If more than 5% (or whatever % the producer can afford to cull) of sheep are still infected then scrapings may need to be taken again to see whether another strain of footrot has become apparent after the first few strains were removed.
14. If less than 5% (or whatever % the producer can afford to cull) of sheep are infected these sheep need to be identified (for example, with red branding fluid on the head) and isolated until they can be removed from the property.

15. Inspections are repeated every 4–6 weeks until all infected sheep have been culled and removed (at least one 'clean' inspection). The specific footrot vaccines give 6–9 months protection and create their own non-transmission period. This means that eradication inspections can continue even if there is an early autumn break.

## Monitoring

1. When footrot appears to have been eradicated, monitor for a breakdown. Check any lame sheep as soon as they are detected. If footrot is found, isolate the affected mob and decide whether to inspect and cull again, or whether to take another set of scrapings.
2. Continue to monitor for as long as footrot is assumed to have been eradicated.

## Introducing new sheep

1. Ask the vendor to provide a Sheep Health Statement with the footrot section completed.
2. Footbathe, inspect and isolate for as long as possible (a minimum of 6–8 weeks) all introduced sheep, including rams, even if from properties with a good reputation. Ideally, isolate these new sheep in a wet paddock where footrot is likely to show up before being mixed with other sheep.

## Ongoing biosecurity

1. Maintain sheep-proof boundary fences as much as possible.
2. Ask neighbours to keep any of your strays and contact you to pick them up rather than drop them back over the fence. Treat these as new introductions (see above).
3. If you find neighbours' strays in with your sheep, immediately isolate the mob, remove the strays, inspect their feet and take appropriate action based on the status of their feet and current conditions underfoot.

## Conclusion

The use of specific footrot vaccines is still in its early stages in Tasmania, but the technique does show great promise.

There are some expenses producers must be prepared for, and results are not guaranteed. Post vaccination inspections are critical and must be carried out thoroughly if the eradication attempt is to be successful. 🐑

### For further information:

Contact your veterinary practitioner

#### DPIPWE:

Bruce Jackson

P: (03) 6336 5306 M: 0407 872 520

Sue Martin

P: (03) 6336 5468 M: 0488 198 500

SheepConnect: [www.tia.tas.edu.au/extensive/sheepconnect](http://www.tia.tas.edu.au/extensive/sheepconnect)

