

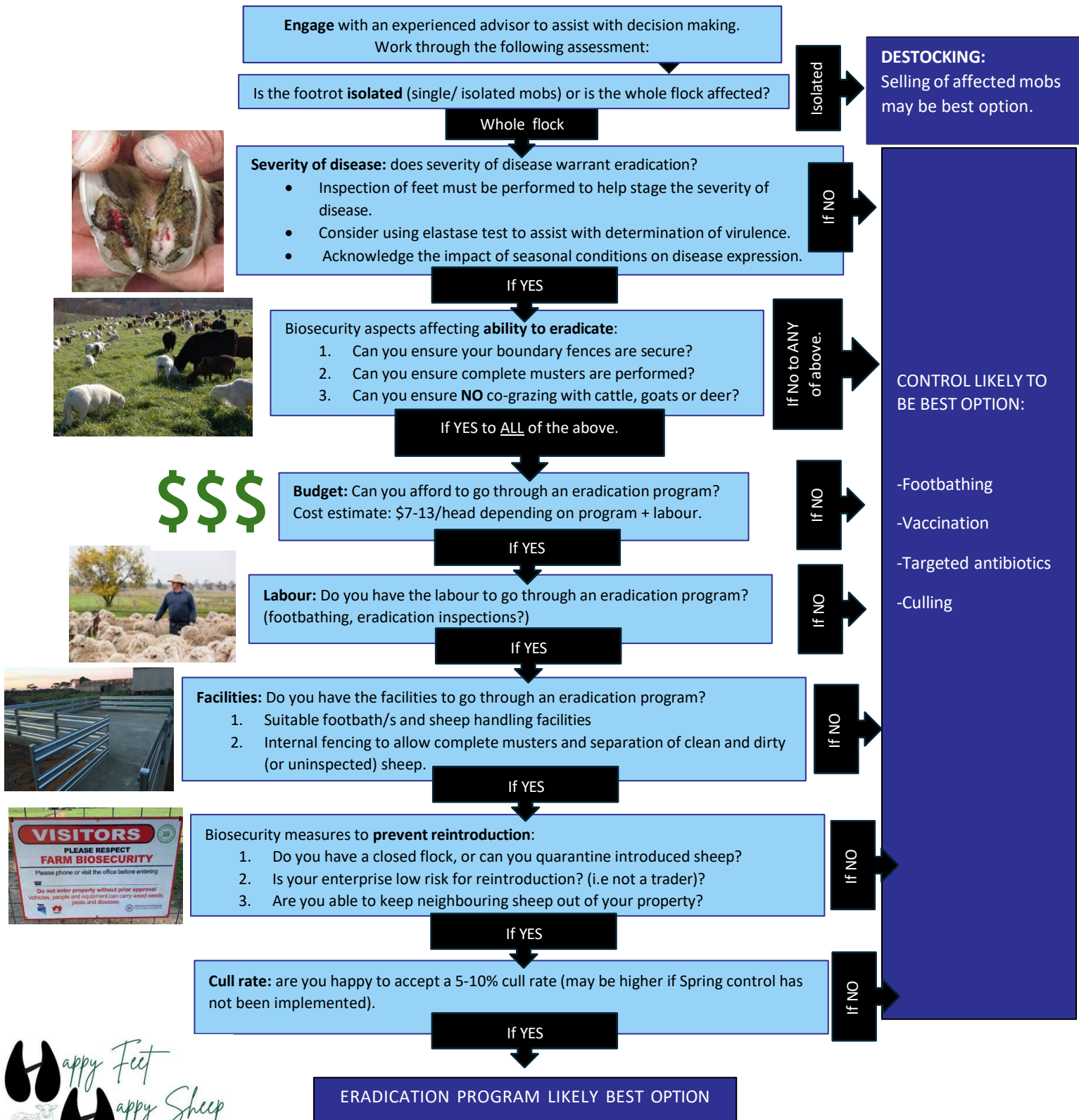
FOOTROT CONTROL



If it is suspected or confirmed that a flock has virulent footrot, producers must take all measures to either control or eradicate the disease. Virulent footrot is a **production limiting disease** and an animal welfare concern, so it is common sense that we should take all measures to control the disease, and when possible, eradicate it. Footrot remains notifiable so any suspicion or confirmation of the disease must be reported to PIRSA.

What to do following a diagnosis of footrot on your property:

Following correct diagnosis, it is encouraged that producers consult with an **experienced advisor**, who can assist in deciding options that best suit their enterprise. Footrot is a complex disease, and the best course of action will differ between properties. The figure below illustrates the type of decision-making process that should be applied following a diagnosis of virulent footrot.



CONTROL OPTIONS



Control measures can be used during the spread period to reduce the severity and transmission of disease and minimise production losses. Disease transmission most commonly occurs in spring but will vary from season to season and between districts. Control will be most effective if initiated early in the spread period, before the disease is able to establish itself. The following control measures can be considered:

- ❖ Footbathing
- ❖ Vaccination
- ❖ Foot paring
- ❖ Culling

Footbathing:

Footbathing is the most common measure used to control footrot and can be very effective at assisting in the healing process and preventing new infection. Footbathing is most effective against interdigital and mild under-run lesions but less effective on severe under-run disease. Cure rates of 50–80% of affected feet or 30–50% of affected sheep may be expected from foot bathing provided treatment is repeated at appropriate intervals¹. There are numerous footbath chemicals used including: zinc sulphate, formalin and copper salts (Radicate). Each are equally effective; however, zinc sulphate and copper salts are preferred as they are gentler on the sheep and pleasant for the operator.² Note: copper salts stain wool.

Footparing prior to bathing has previously been recommended as it may allow the footbath chemicals to penetrate into more severe under-run lesions⁶. Other sources caution that paring hooves prior to footbathing is time consuming and will inevitably delay the onset of footbathing.² In addition, when aiming for control, the role of footbathing is to reduce spread and the establishment of infection, a process that foot paring does not influence.

The frequency and time sheep stand in a footbath will influence efficacy. During high challenge periods short-term footbaths (walkthrough up to 5 minutes standing time) may need to be repeated frequently (weekly) to effectively reduce spread. Long term footbaths (standing in footbaths for 1 hour) will protect for longer periods and need to be repeated less frequently (every 3-4 weeks). The required frequency of footbathing will be influenced by seasonal conditions and the severity of disease. Footbathing can be time consuming and if the producer cannot commit to a regular footbathing schedule, other control measures such as vaccination should be considered.

Footbathing is used to prevent the spread and establishment of infection. It does not provide sustained protection against reinfection so needs to be performed frequently to be effective.

Vaccination:

Coopers Ovilis Footvax is the only registered vaccine available for the treatment and control of ovine footrot. Footvax can provide a **protection rate of up to 80% and cure rate of 60% if used correctly**.³ It is best used **prior to the onset of spread conditions**.

Two vaccinations, at least 6 weeks apart are required.

Following the second vaccination, sheep will be protected against footrot for 10-12 weeks in Merinos and up to 16 weeks in British breeds. As the protection window is short, timing of vaccination is critical, and a third dose may be required depending on seasonal conditions. A strong immune response is induced following the two priming doses and subsequent booster vaccinations up to 12 months later will protect for a period of 3-4 months.

Response to vaccination may differ between farms. Vaccination is best used in combination with footbathing.

A well-designed footbathing program, in addition to vaccination can be very effective in containing footrot, commonly reducing disease to 5-10% of the flock.

Antibiotics:

The routine use of antibiotics for the control of footrot is discouraged. Whilst oxytetracycline is very effective at curing affected sheep, it offers no protection from re-infection and is therefore not an effective control option. Antibiotics may be used on an individual scale to treat severely affected sheep or as part of an eradication program, to salvage sheep that have responded poorly to the spring control program. They should not be used as a routine annual control measure. For the treatment to be effective it is recommended that sheep be kept in a dry environment for 24 hours after treatment.² Antibiotics are only available through a veterinarian and meat withholding periods need to be considered when using them.

Culling of non-responders/Genetic Resistance:

Culling of non-responders is commonly recommended as part of a strategic control program. Culling of non-responders will assist in removing genetically susceptible animals and reduce the number of infected feet and footrot bacteria on the property.⁴

Breeding for increased footrot tolerance is well established in New Zealand with a breeding value (FR) released in 2020 on 'Sheep Genetics'. A similar project in Australia also aims to release a breeding value and eventually an ASBV for resistance to footrot. Producers could then select rams with favourable ASBVs to increase the genetic resilience of their flock to footrot. The risk to this approach is that these properties would still carry the infection and pose a risk to neighbours.

A control program will not eradicate the bacteria from the property so these measures will need to be repeated annually to control the disease.

Economic impact of virulent footrot. Why it is worth controlling.

In some environments virulent footrot can **reduce production by 10-20%**. Production losses associated with footrot are due to: reduced wool production and quality, increased incidence of body strike, reduced weaning percentages, reduced weight gain, reduced value of sale sheep and increased culling rates.⁷ For a maternal ewe enterprise selling fat lambs this could equate to an average loss of \$22.90/ewe. If appropriate control options are instigated production losses are likely to drop to \$0.6-\$4/head.

The cost of control (vaccination + regular footbathing) can be estimated at \$8.40/ewe (including labour, footbath construction and ongoing production losses associated with the disease).

Considering the above, effectively controlling footrot is essential to maximise production. Eradication, when possible, may be considered even more favourable as it will remove the annual cost of control and reduce labour input. It is however a costly endeavour with eradication programs costing approximately \$19/ewe (direct costs) or \$54/ewe (if indirect costs are considered).

ERADICATION OPTIONS

The eradication of footrot from a property is achievable, if a well-planned, thorough program is conducted and the footrot program is prioritised for the year in which eradication is attempted.

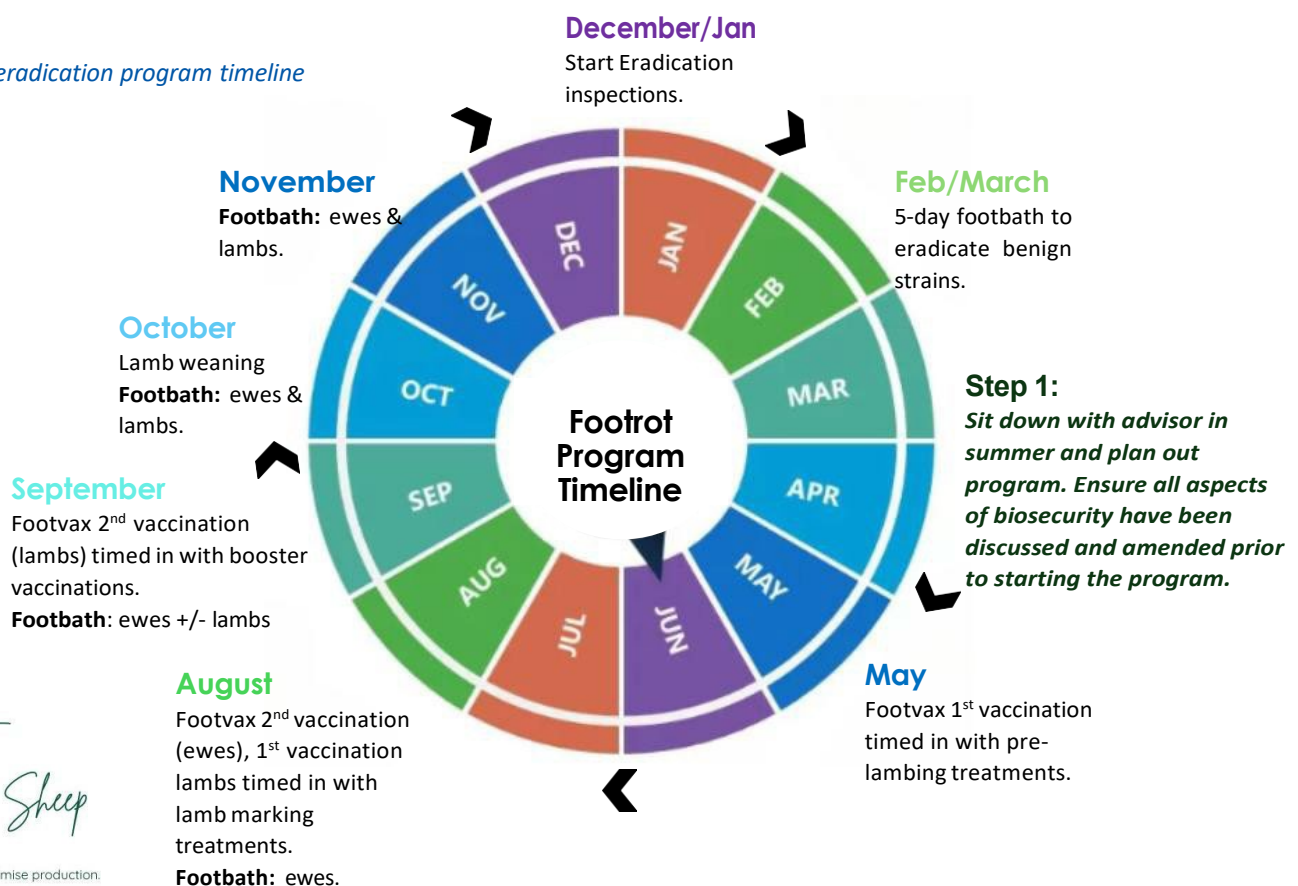
If the risk of re-infection is low and the severity of disease moderate to high, an eradication program is likely to be the most economic option. It is recommended that you **engage with an experienced advisor** to discuss the following eradication options:

- Whole flock dispersal
- Disposal of infected sheep
- Eradication following spring control program.

Every producer will have different priorities and expectations that need to be considered when designing an eradication program. When deciding on the best eradication approach it is important to consider the severity of disease, type of enterprise, infrastructure, labour and budget. Engaging an experienced advisor will allow you to discuss your options and develop a tailored program for your property. Having a plan and a clear way forward can also help to reduce the mental burden, alleviating anxiety and stress.

Whichever approach is elected; an eradication program should be thorough and well planned. An example of an eradication program is illustrated in the diagram below (NOTE: A program will differ from property to property so this diagram should be considered an example, not a guide).

Figure 1: Example eradication program timeline



FREQUENTLY ASKED QUESTIONS



Is it possible to eradicate/eliminate footrot from your property?

Yes, it is possible to successfully eradicate both benign and virulent footrot from your property. To be successful it is **essential** that you follow a well-planned, thorough program and use an accredited contracting team to assist with eradication inspections. Engaging with an experienced advisor is strongly recommended as they can ensure that all aspects of biosecurity are addressed and an effective control program is designed that integrates in with your farming operation.

Can I just draft off lame sheep? Will this eventually get rid of footrot?

No. There is a poor correlation (30%) between severity of under-run disease and lameness. Footrot bacteria can survive for prolonged periods (up to 2 years) in the foot, so an effective control and eradication program is required to eliminate the bacteria.

My sheep are lame, should I just start vaccinating with Footvax?

No. It is important to define the cause of lameness and seek appropriate advice regarding the use of Footvax. Footvax is a useful tool in the control of **virulent footrot** but does not control disease caused by benign strains. It also has a short window of immunity, so timing of vaccination is critical to the success of the program. A poorly designed vaccination program will cost you money, increase labour and have unsatisfactory results in terms of lameness reduction.

I'm pretty sure my sheep have clover scald, not footrot. Should I still seek help?

Yes. The term 'scald' has been overused for years and has been a barrier to producers seeking a correct diagnosis and developing a successful management plan. The term scald encompasses ovine interdigital dermatitis (OID), benign footrot and early virulent footrot. Most producers that think they have scald likely have a strain of footrot bacteria on their property. Knowledge is Power; it is time for producers to stop burying their head in the sand and seek help. A lameness control program will improve welfare, production and profitability and reduce the mental and emotional toll of dealing with lame sheep.

Does footbathing work?

Yes, footbathing can be a very effective method of controlling the severity and spread of footrot. Footbathing will be most effective if started early in the spread period and repeated frequently (every 1-2 weeks for short term, every 3-4 weeks for 1 hour bathing). Keys to success are:

- **Concentration:** ensure the concentration of the bath remains adequate (need to measure with a hydrometer). 10-20% depending on program.
- **Standing time:** ensure sheep remain in the bath for an adequate period of time.
- **Dry standing following bathing:** allow sheep to stand on dry ground for 1 hour following bathing if paddock conditions are wet.
- **Clean paddock following bathing:** moving sheep to a clean paddock following bathing will increase efficacy.
- **Use a wetting agent:** the addition of sodium lauryl sulphate will improve efficacy through increasing tissue penetration and extending the time zinc is in contact with the foot.

Should I just blanket treat with antibiotics?

No. Blanket treatment of all sheep is not recommended. Antibiotics can be very effective at curing sheep with footrot but have no ongoing protective capabilities. Antibiotics are most effective when conditions are dry so should be used at the end of a spread period (early summer). The use of antibiotics may delay eradication when intermediate strains are present. The use of antibiotics needs to be discussed with a veterinarian and withholding periods considered.

Can cattle get footrot? Is it a problem if I want to eradicate footrot and I co-graze with cattle?

Yes. Cattle can be a reservoir of infection. They can carry footrot bacteria (most commonly benign bacteria) but will not express disease. When attempting an eradication program, it is recommended to cease co-grazing with cattle and keep them separate from sheep following eradication.

How long can footrot bacteria live in the environment?

Footrot bacteria do not survive for long away from the host (in the environment). Most studies agree that bacteria will survive for no longer than 7 days in the environment however there are some unique conditions (deep shrink-swell cracks where moisture can remain) that may allow the bacteria to survive for longer periods of time (2 weeks). For this reason, we often use a rest period of **2 weeks** in winter/spring and **1 week** in summer to call a paddock 'clean'.

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