



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Eradication of footrot from sheep flocks on the Northern Tablelands*



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Agnote DAI-321, August 2004
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*Information to supplement Agfact A0.9.56 Footrot: sheep and goats, *fifth edition, February 2003*

Footrot eradication strategies in southern NSW are based on a predictable spread period in spring, combined with hot dry summers that provide a reliable non-spread period suited to undertaking eradication inspections. Recommended programs involve controlling the disease before and during the spread period (to minimise the number of affected sheep), with detection and removal of all infected sheep in the flock during the non-spread period (summer).

On the Northern Tablelands, however, the less predictable occurrence, or absence, of non-spread periods requires a more flexible eradication strategy. Almost all breeding flocks on the Northern Tablelands follow a common management calendar. This means that at certain times of the year it is usually not possible to undertake footrot inspections and options for controlling spread are limited. A different approach to that undertaken in southern NSW is normally required.

THE NATURE OF FOOTROT ON THE NORTHERN TABLELANDS

Field strains of the footrot bacteria range from highly virulent through to benign. Within this range there is a point above which a strain causes virulent footrot (which is subject to regulatory control measures) and below which strains cause benign footrot (with no regulatory consequences).

Highly virulent footrot is easy to recognise clinically and easy to eradicate because infected sheep can be readily identified. Because there has been a program to eradicate footrot on the Northern Tablelands since

1960 when the Armidale Quarantine Area was first introduced — expanded later to become the New England Protected Area (Footrot) in 1969 — highly virulent strains are now relatively uncommon. The effect of this selection has been to increase the proportion of footrot isolates in New England flocks that lie closer to the cut-off point between benign and virulent. These low-virulent strains still cause significant losses in a flock, particularly under conditions that are ideal for footrot expression.

With highly virulent strains, many sheep in the flock can be affected with severe lesions. Where the virulence of a strain is less, the disease will not be as aggressive and the diagnosis is not always clear-cut. This is particularly the case if seasonal or pasture conditions are not ideal for expression of the disease. In these situations, flocks affected with low-virulent strains may require several inspections over a considerable period of time along with laboratory testing before a correct diagnosis can be made.

When eradicating low-virulent strains, it is important that clean mobs are inspected even more carefully as suspect lesions are likely to be less obvious than if more virulent strains were involved.

EFFECT OF MANAGEMENT AND SEASON

The New England region has a summer-dominant rainfall distribution. Seasonal conditions are usually suitable for spread of footrot from late spring to early summer (November–December) and through to early autumn (March–April).

Crossbred flocks on the Northern Tablelands usually start to lamb in early September while merino flocks lamb later, starting between mid-September and mid-November. Lambs are weaned, dependent on time of lambing, between late December and late January. Merino lambs are mulesed at marking or in autumn.

This means that in breeding flocks, footrot eradication activities are usually restricted to the period between mid-January and mid-July. Over late winter and spring, low temperatures generally restrict the spread of typical New England strains. Vaccine may play a role to control the effect of highly virulent strains during times when it is not practical to control footrot by footbathing. Approval must be obtained from the NSW Department of Primary Industries before vaccine can be used.

Eradication programs for dry sheep can start earlier in the spring.

STRATEGIES FOR THE NORTHERN TABLELANDS

Footrot eradication programs are time-consuming and costly. However, the most expensive programs are those that fail to eradicate the disease and have to be repeated. Because footrot is a notifiable disease and eradication is compulsory, all eradication programs must be agreed to and supervised by Rural Lands Protection Board (RLPB) animal health staff.

To maximise the chance of success, these programs must be properly tailored for each enterprise. RLPB inspectors have a responsibility to ensure the program on each property is properly planned and has a good chance of success. Ongoing supervision of the program and flexibility to modify the program in response to changing circumstances is essential. Where practical assistance to implement a program is required, accredited footrot contractors (who must operate under the supervision of a veterinarian) may be employed to carry out the work.

Typical eradication programs are based on footbathing and segregation. Segregation means dividing the flock into sheep with no evidence of footrot (that is, 'clean' sheep) and those that either have footrot or where there is a suspicion that the disease may be present. These are managed as isolated groups.

Footbathing can be undertaken using either 20% zinc sulfate or Radicate®. Formalin is no longer recommended as a footbath for occupational health and safety reasons. Radicate® requires sheep to stand

in the solution for 15 minutes then allowing the feet to dry on grating for a minimum of 1 hour.

Success of an eradication program requires priority and resources to be given to the 'clean' sheep — repeated inspections are required to ensure none is infected and isolation measures employed so that they stay that way. Depending on the type of program priority may also need to be given to preparing clean pastures.

Of much lower priority are attempts to cure infected sheep. Treatment of infected sheep is labour intensive and breakdowns in 'cured' groups of sheep are a common reason for the failure of eradication programs. Sheep in the infected group should be sold as soon as possible. Some footbathing may be appropriate to alleviate symptoms while infected sheep are fattened or taken through to shearing. It is critical that the infected group is effectively isolated from other mobs until their disposal.

TYPES OF ERADICATION PROGRAMS

Segregation — zinc sulfate footbathing

Zinc sulfate products are registered for treatment of footrot and can be used as a 20% solution with or without a wetting agent. Sodium lauryl sulfate acts as a detergent or wetting agent. When added to the zinc sulfate solution at 2% there is limited penetration of zinc into the horn of the hoof. Standing sheep in the footbath for 15 minutes and drying on grating may also increase penetration.

In breeding flocks programs should be planned to commence as soon as possible after weaning (usually mid-January). The first inspection of breeding ewes should occur within a week of weaning. The weaner lambs should also be inspected at this time. Inspection means examination of all feet of all sheep to check for evidence of footrot. Consider 'doubtful' feet to be infected (see Agfact A0.9.56 *Footrot: sheep and goats* for signs of the disease).

Prior to the first inspection, thought should be given to the provision of clean paddocks and laneways from the yards as footbathing with zinc sulfate does not reliably protect against infection. Paddocks, yards and laneways are considered clean after 7 days without sheep. Eradication programs require strict isolation of clean, suspect and infected sheep from the time they leave the yards after their first inspection and footbath until quarantine is released. Clean mobs should always have first use of yards and laneways.

At the first inspection all sheep are segregated into clean, suspect and infected mobs. All sheep are branded according to status and footbathed.

The clean and suspect mobs should be footbathed again one week later.

Clean and suspect mobs are re-inspected at 3–4 week intervals, with footbathing of mobs in which infected sheep are found. A 'clean inspection' of a mob has occurred when no infected sheep are found. When all sheep are clean footbathing is not undertaken.

Sheep in suspect and infected groups that respond to treatment and appear clean at re-inspection (day 21–28) may be worth salvaging. These sheep should be moved to a 'cured' mob. While it may be possible to salvage infected sheep later in the program with additional treatments, it is not recommended as these sheep present the greatest risk of breakdown.

This 3–4 week re-inspection cycle continues until two consecutive clean inspections are achieved. Further inspections are encouraged to increase confidence that the mob is not infected. Sheep in suspect or 'cured' mobs should not be classified as 'clean' and returned to the main flock until after quarantine is released.

After there has been a minimum of two clean inspections of all sheep in the flock and after sheep have been through a suitable challenge period (favourable environmental conditions that allow footrot to appear if it is present), quarantine can be released following a further clean inspection. No footbathing should be undertaken over this period.

Zinc sulfate programs are most effective when conditions remain dry throughout the program.

Segregation — Radicate® footbathing:

Radiccate® has an advantage over zinc sulfate in that it provides a reliable 10 to 14 day protection period against re-infection. Eradication programs can be undertaken at any time of the year including spread periods. Radiccate® treatment also provides a greater chance of curing infected sheep than zinc sulfate because of greater penetration of chemical into the horn of the hoof.

The protection period simplifies management as clean sheep can be returned to infected pastures and separate use of yards and laneways by clean and infected sheep is less critical. However, in order to take advantage of this period of protection, treatments must follow a relatively strict timetable. Individual flocks must have a program documented before starting.

As with zinc sulfate, treatment and segregation of ewes and weaners should start as soon as possible after weaning (day 1). Wethers or dry sheep can start at any time of the year. At the first inspection all sheep are identified and segregated into clean, suspect and infected mobs after which they are footbathed.

All clean sheep should be given a second footbath on day 10.

All infected sheep should be given a second footbath on day 7 and a third footbath on day 14.

At day 20 clean sheep are re-inspected and at day 21 infected sheep are re-inspected and mobs with infected or suspect sheep are given another footbath. Re-inspections continue at 21-day intervals until the flock has two clean inspections.

Sheep in suspect and infected groups that respond to treatment and appear clean at the first re-inspection (day 21) may be worth salvaging. These sheep should be moved to a 'cured' mob. It may be possible to salvage infected sheep later in the program with additional treatments. This decision would be based on the numbers of sheep involved, the severity of lesions and the value of the sheep weighed against the greater risk of breakdown that these sheep present.

This 3–4 week re-inspection cycle continues until two consecutive clean inspections are achieved. Further inspections are encouraged to increase confidence that the mob is not infected. Sheep in suspect or 'cured' mobs should not be classified as 'clean' and returned to the main flock until going through a suitable challenge period and after the final inspection to release quarantine is undertaken.

As with a zinc sulfate program, the inspection to release quarantine follows two clean inspections and the passing of a suitable challenge period. Combining sheep in the various mobs should be delayed until after quarantine is released. No footbathing should be undertaken over this period.

While Radiccate® programs may initially appear more expensive, they generally allow greater flexibility in managing the flock than programs using zinc sulfate. It is also considered that Radiccate® doesn't harden feet and so is not likely to mask small developing lesions. However, care should be taken to avoid splashing with Radiccate® as this could result in staining of wool. In addition, the chemical is corrosive and metal surfaces may need to be protected. Always read the label and follow the directions on the label.

Antibiotics

Antibiotics work best where the feet are dry. Unlike experience in southern NSW with hot dry summers, the use of antibiotics has met with only limited success in curing footrot infected sheep on the Northern Tablelands. Antibiotics are only available through a veterinarian who will be able to advise on how they could be best used in an eradication program. Generally the sheep's feet must be kept dry (on grating) for up to 12 hours after treatment. Antibiotics could play a role to alleviate symptoms while infected sheep are fattened or taken through to shearing but it is important that withholding periods are observed before sending sheep to slaughter.

CONCLUSION

Footrot is a notifiable disease and eradication of virulent strains is compulsory throughout NSW. Owners of lame sheep are encouraged to seek assistance from RLPB staff or approved veterinarians to determine whether their sheep in fact have virulent footrot or some other foot problem. If footrot is found a properly planned program must be developed and implemented. RLPB staff or approved veterinarians can help work through the range of options available and tailor programs to individual flocks, maximising the chance of quickly and successfully eradicating footrot.

Footrot free is the way to be.

ACKNOWLEDGMENTS

The technical input of Betty Hall, Australian Veterinary Association, and Rob Powell, Livestock Contractors Association, is acknowledged.

DISCLAIMER

The information contained in this publication is based on knowledge and understanding at the time of writing (August 2004). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

The product trade names in this publication are supplied on the understanding that no preference between equivalent products is intended and that the inclusion of a product name does not imply endorsement by NSW Department of Primary Industries over any equivalent product from another

ALWAYS READ THE LABEL

Users of agricultural or veterinary chemical products must always read the label and any permit, before using the product, and strictly comply with the directions on the label and the conditions of any permit. Users are not absolved from compliance with the directions on the label or the conditions of the permit by reason of any statement made or not made in this publication.