

NSW Footrot Program

2023 Report



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Introduction

Footrot is a contagious bacterial disease of sheep and goats, caused by the organism *Dichelobacter nodosus* (*D. nodosus*) as the primary pathogen. Disease expression and transmission is strongly influenced by environmental, management and host factors, as well as microbial factors. For regulatory purposes, footrot infections in NSW are classified as either benign or virulent at the flock level. Footrot is a notifiable disease in NSW under the *NSW Biosecurity Act 2015*, with regulatory support for compulsory eradication programs in flocks with virulent footrot (VFR). The regulatory and notifiable status of footrot varies across jurisdictions in Australia.

The purpose of the NSW Footrot Program is to minimise the negative impact of virulent footrot on:

- animal welfare,
- sheep and goat enterprise productivity, and
- social wellbeing of NSW sheep and goat producers.

The NSW Footrot Program has operated in NSW since the development of the footrot strategic plan in 1988. It is regarded as a successful example of an industry/government partnership. In 1988, it was estimated there were 8% of flocks affected by footrot. By 1991, this had risen to 15% due to increased reporting by graziers and better disease intelligence. By 2009, the whole of NSW was declared a Protected Area and the goal of maintaining the prevalence of virulent footrot at less than 1% of flocks has been achieved ever since. State-wide prevalence, as a percent of sheep flocks with >50 head, was 0.66% in December 2023.

Ongoing surveillance and response activities have maintained a relatively low prevalence of virulent footrot. However, it remains a disease risk to the NSW sheep and goat industries. With full expression, uncontrolled virulent footrot is a debilitating disease with significant economic loss from reduced wool growth and quality, poor ewe fertility, poor growth rates, losses from blowfly strike, reduced value of sale sheep and a significant animal welfare issue. On farm management strategies, such as culling of at-risk groups, foot bathing in disinfectants, antibiotic treatments and vaccination, can help control the disease during transmission and expression periods.

This report provides an overview of the NSW Footrot Program in 2023 and was compiled by NSW DPIRD from information submitted by each Local Land Services (LLS) region and from the property records held in the NSW property disease recording system Livestock Health Management System (LHMS). The report reflects the available information as of August 2024 for the calendar year 2023. Difficulties in extracting appropriate data from LHMS may have impacted the accuracy of some information.

Virulent footrot prevalence and distribution

As of 31 December 2023, 99 flocks with >50 head sheep and/or goats in NSW were diagnosed as being infected with VFR and subject to an Individual Biosecurity Direction (IBD). The development of an approved footrot eradication plan and movement restrictions requiring all animals to be sold direct to slaughter are requirements included in the IBD.

The 99 infected flocks represent 0.66% of the NSW sheep flocks of >50 head, demonstrating continued success in achieving the NSW Footrot Program's historical goal of <1% of sheep flocks in NSW being infected with VFR. A breakdown of these figures by LLS region can be seen in Table 1.

Table 1. NSW virulent footrot prevalence by LLS region as at end December 2023

LLS region			
Central Tablelands	20	1,985	1.0%
Central West	27	3,063	0.85%
Greater Sydney	0	31	0.0%
Hunter	0	134	0.0%
Murray	19	1,254	1.5%
North Coast	0	15	0.0%
North West	0	908	0.0%
Northern Tablelands	0	1,172	0.0%
Riverina	19	3,097	0.6%
South East	14	2,617	0.5%
Western	0	790	0.0%
TOTAL	99	15,066	0.66%

^aAs reported in the 2023 Local Land Services Annual Land and Stock Return data

Whilst the overall prevalence of VFR in NSW is 0.66%, the prevalence of VFR within individual LLS regions varies across the state. Six regions had no cases of VFR reported in 2023 in flocks with >50 head - the Greater Sydney, Hunter, Western, Northern Tablelands, North West and North Coast. South East, Riverina and Central West regions reported flock prevalences under 1% (range 0.5-0.85%) and only Murray and Central Tablelands LLS regions reported flock prevalences of ≥1%.

Hunter, North Coast and Greater Sydney regions all feature relatively small numbers of susceptible individuals (sheep and goats) and relatively few flocks or herds >50 head. In the Hunter in 2023, there were two Property Identification Codes (PICs) for properties with goats under IBD for VFR but each had <10 susceptible animals.

The absence of VFR detections in flocks in the significant sheep producing regions of the Northern Tablelands and North West LLS is very encouraging and continues the trend of falling prevalences of VFR seen in the north's sheep flocks in recent years. The unfavourable environmental conditions in the northern sheep areas during the risk period were not conducive to potential spread in flocks that may have undetected infection present.

The central and southern tablelands and slopes of NSW including the Riverina continue to experience a higher prevalence of VFR, reflecting the favourable environmental conditions in those areas for footrot transmission in 2023.

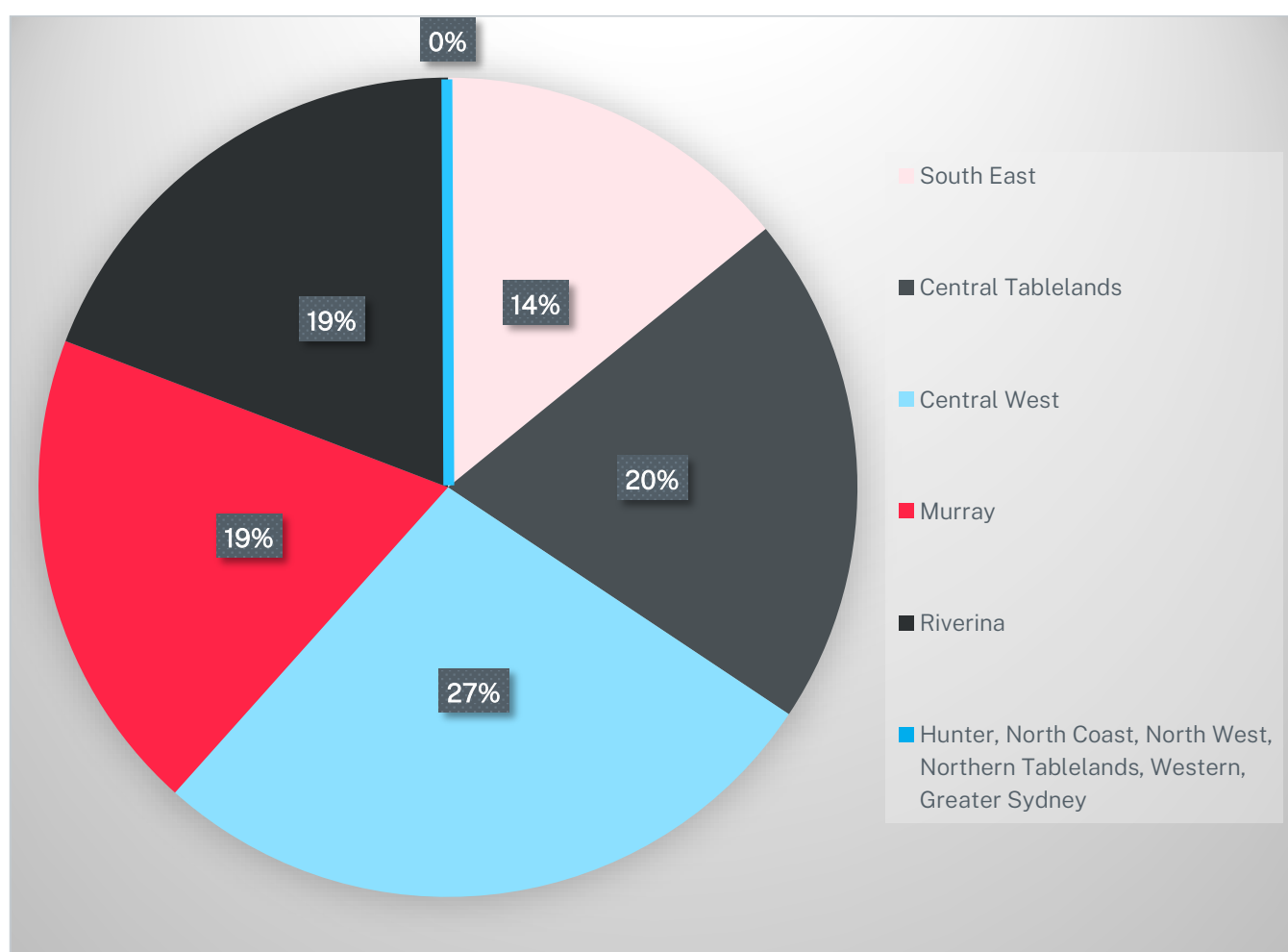


Figure 1: Distribution of virulent footrot flock prevalence between regions (at end December 2023)

Virulent footrot diagnoses 2014-2023

In 2023 there were 53 PICs newly diagnosed with VFR as a result of field investigations by LLS (Figure 2). New virulent footrot diagnoses in 2023 decreased slightly from the previous year but as seen in the data new VFR detections vary considerably between years. This is to be expected with a disease that is very much dependent on favourable environmental conditions for spread and on timing of surveillance investigations for detection.

Movements of traded sheep into and within NSW may include infected sheep from higher footrot prevalence areas to where footrot is uncommon. Transmission within and between flocks in low prevalence areas is possible when factors supporting spread are present.

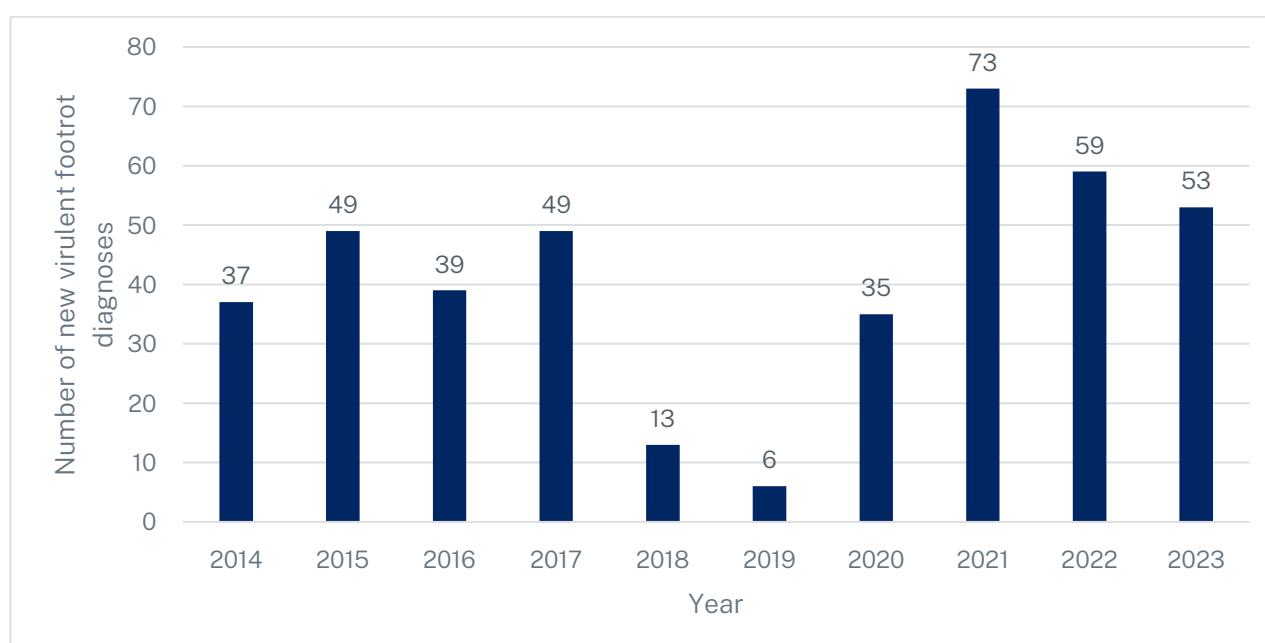


Figure 2: New virulent footrot diagnoses by LLS (2014-2023) as recorded in LHMS

PICs released from IBD for VFR in 2023

In 2023, there were 63 flocks released from an IBD after achieving freedom from VFR. All the releases except for a single flock in the North West LLS, were from the five LLS regions with current footrot flocks present. The most active quarter for releases was the second quarter, but releases occurred in all 4 quarters reflecting year-round activity across NSW in eradication of footrot from flocks.

Favourable seasonal conditions and contractor availability are constant challenges to completing eradication programs successfully.

Table 2: Number of flocks released from IBD in 2023

LLS Region	Jan - Mar	Apr – Jun	Jul – Sep	Oct - Dec	Total
Central Tablelands	1	4	4	0	9
Central West	2	4	5	6	17
Greater Sydney	0	0	0	0	0
Hunter	0	0	0	0	0
Murray	2	2	3	3	10
North Coast	0	0	0	0	0
North West	0	0	0	0	0
Northern Tablelands	0	0	0	0	0
Riverina	1	12	1	3	17
South East	2	6	1	1	10
Western	0	0	0	0	0
TOTAL	8	28	14	13	63

Virulent footrot case duration

At the end of December 2023, 90% of VFR infected flocks had been under an IBD for less than three years. More than half of the flocks had only been under an IBD for less than 12 months reflecting the favourable transmission conditions for footrot during 2023 in the regions with VFR present.

The 10 flocks that had been under restrictions for longer than three years had various reasons for delays in eradication of footrot. This was usually related to non-veterinary factors such as availability of contractors to assist, staff health issues and partial sale of portions of the property.

The breakdown of case duration between regions is outlined in Table 3.

Table 3: Duration of IBD of current VFR infected flocks (as at end Dec 2023)

LLS Region	≤ 1year	1-2 years	2-3 years	>3 years	Total no. of flocks
Central Tablelands	7	3	7	3	20
Central West	17	3	5	2	27
Greater Sydney	0	0	0	0	0
Hunter	0	0	0	0	0
Murray	11	4	4	0	19
North Coast	0	0	0	0	0
North West	0	0	0	0	0
Northern Tablelands	0	0	0	0	0
Riverina	13	2	2	2	19
South East	5	1	5	3	14
Western	0	0	0	0	0
TOTAL	53	13	23	10	99
% of Total VFR flocks	54%	13%	23%	10%	100%

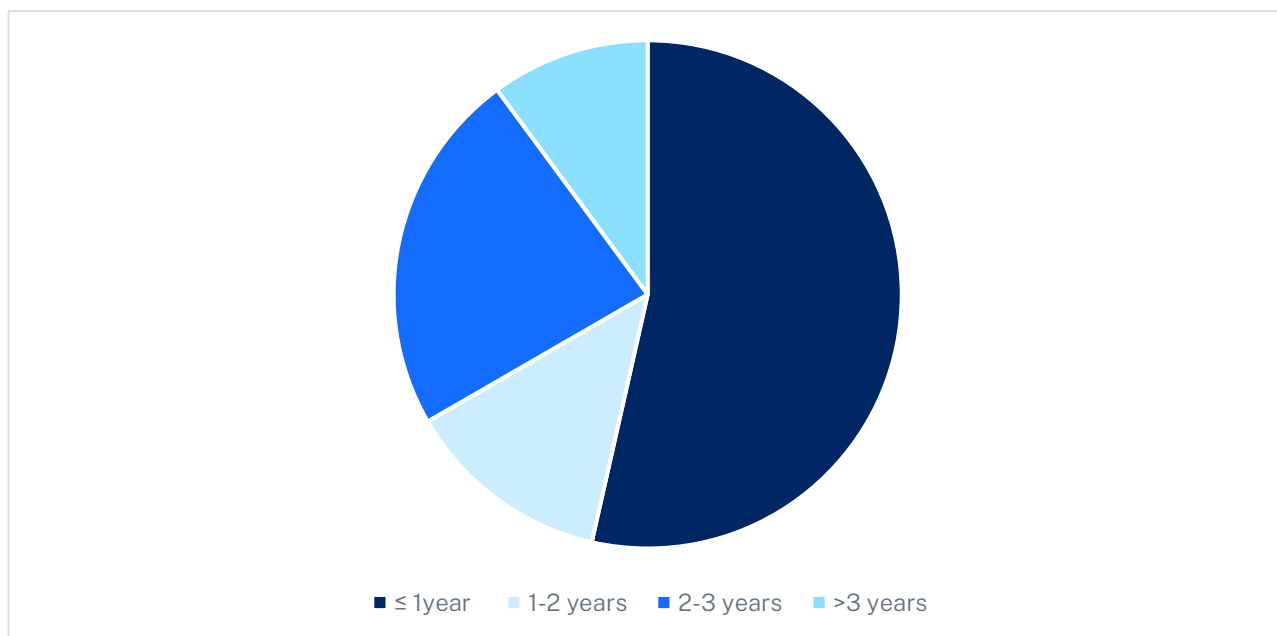


Figure 3: Duration of IBD of VFR infected flocks (as at end Dec 2023?)

Laboratory diagnostics

The diagnosis of virulent footrot in NSW is based on clinical examination of the affected flock, with consideration given to the past and present environmental conditions. Laboratory diagnostics, namely culture and the elastase test, may be used as a diagnostic aid at the discretion of the investigating LLS District Veterinarian. Laboratory testing to support the program is undertaken at Elizabeth Macarthur Agricultural Institute (EMAI) and funded by NSW DPIRD.

There were 152 laboratory submissions to EMAI requesting laboratory testing to support a footrot diagnosis. This was almost twice the number in 2022 and reflects the more favourable environmental conditions for footrot spread during much of 2023. The number of submissions peaked at 20 in February, and submissions slowly decreased to a low of 6 in August before increasing again in spring and early summer.

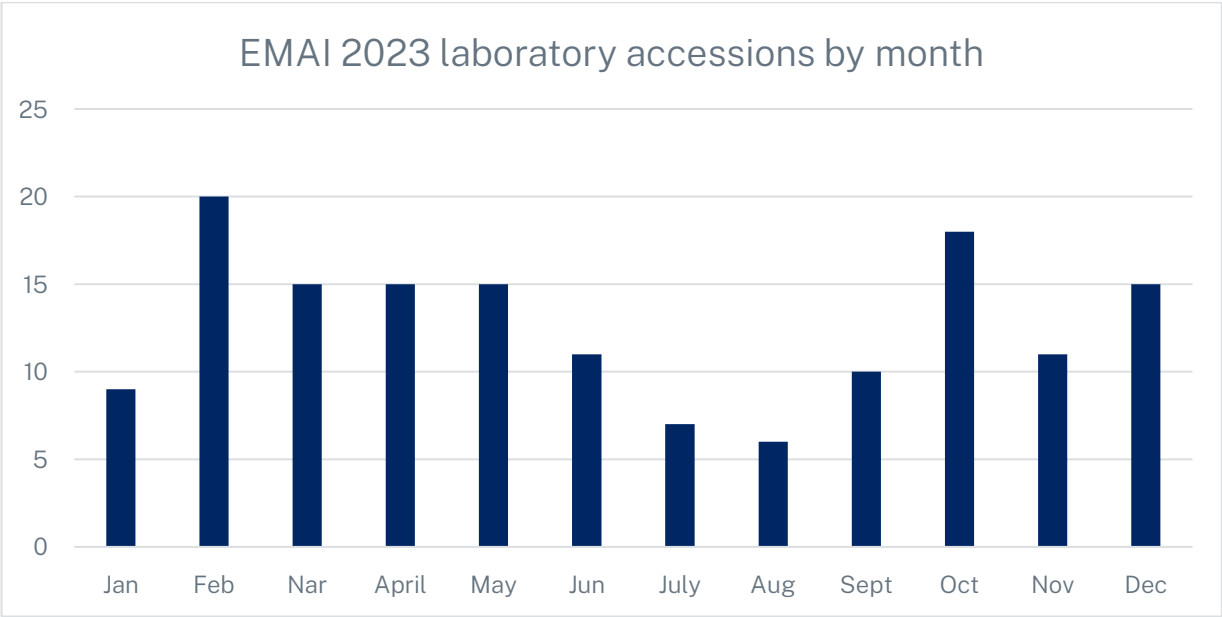


Figure 4: Laboratory submissions associated with footrot diagnosis in 2023

Footrot Research

Researchers at EMAI have developed a rapid RNA test for quantifying *D. nodosus* virulence and will be validating it against the elastase test and a virulent footrot diagnosis at the flock level. At this stage the test is not available for diagnostic purposes as it is still being validated, but if it performs well, it will be a useful adjunct in laboratory testing for footrot. Additional samples collected during footrot investigations are being used for test validation.

The Coopers Footvax® vaccine is occasionally used in NSW flocks but requires CVO approval for use. The vaccine is not restricted in availability in Victoria. Research to develop a better vaccine is ongoing but at this stage commercial availability is quite a long way off.

Resourcing

The NSW Footrot Program is primarily managed by NSW DPIRD and implemented by LLS. The estimated time spent by staff implementing the NSW Footrot program is presented below, as reported by the LLS regions. Some regions commented on how environmental circumstances, varying from dry to wet conditions, resulted in difficulties in completing footrot related work over 2023.

Local Land Services

- **Central Tablelands:** 1.5 full time equivalent (FTE) district vet (DV) & biosecurity officer (BO)
- **Central West:** approximately 2 FTEs
- **Greater Sydney:** minimal - respond to notifications from private vets or owners; only checked several small holders in 2023 (insufficient to monitor hours spent)
- **Hunter:** 1 FTE x 12 days
- **Murray:** 8 months 3 FTE x 4 days per week, 4 months 2 FTE x 1 day per week
- **North Coast:** nil resourcing of program as no demand
- **North West:** 2 FTEs x 16 days
- **Northern Tablelands:** 5 x BOs spend 5% of time at saleyards, lameness investigations: 1 FTE DV x 10 days, 1 FTE BO x 15 days
- **Riverina:** 2 FTE year round
- **South East:** 1 FTE DV and 1 FTE BO year round for farm inspections, client management, tracing and program monitoring.
- **Western:** Approx. 1 FTE x 4 days per year for traces
- **State LLS:** LLS Animal Biosecurity & Welfare Business Partner involvement as required
- **NSW Footrot Steering Committee** - 1 x 0.5 day meeting annually (including preparatory reading): 1 x business partner, 1 x DV representative, 1 x LLS executive
- **NSW Footrot Internal Working Group** - 1 x 0.25 day meeting annually (including preparatory reading): 1 x Business Partner, 2 x DV, 1 x Team Lead
- **Footrot Procedure Writing Group** – 5 x 0.25 day meetings, 1 x business partner, 1 x team lead

NSW Department of Primary Industries and Regional Development

- **Foot program coordinator** – approx. 0.5 FTE Veterinary Policy & Project Officer annually, includes role as Executive Officer of Footrot Steering Committee
- **NSW Footrot Steering Committee** - 1 x 0.5 day meetings annually (including preparatory reading): 1 x CVO representative
- **NSW Footrot Internal Working Group** – 1 x 0.25 day meetings annually: 1 x CVO representative

Surveillance, extension, and advisory actions

Footrot surveillance activities across the state included saleyard attendance for lameness inspections, on-farm investigations of reported lameness as well as investigations on trace properties that were neighbours to, had sold sheep to or received sheep from VFR infected properties. LLS also undertook a range of extension and advisory activities to promote the footrot program and increase industry awareness and understanding of the disease and its biosecurity and production impacts. Details of the surveillance, extension and advisory services provided by LLS in 2023 are outlined in Table 4.

LLS Region	Surveillance	Extension & Advisory
Central Tablelands	75% of all sales Cowra, Mudgee and Carcoar (CTLX) attended by DV or biosecurity officers. General lameness investigations.	2 x social media posts Newsletter articles
Central West	Weekly surveillance at both Dubbo and Forbes sheep sales. Trace investigations on farm.	Ad-hoc presentations at farmer workshops (LLS and externally-organised events)
Greater Sydney	Nil reported	Nil reported
Hunter	Inspections at one monthly sheep saleyard in region (Denman)	Newsletter article
Murray	17 saleyard visits 36 lameness, surveillance and trace investigations on-farm 20 trace phone calls	10 x presentations to farmer groups (LLS and externally-organised events)
North Coast	No surveillance activities, no routine sheep sales	Nil
North West	10 VFR on-property exclusions. Quarterly saleyard inspections.	1 newsletter article
Northern Tablelands	40 visits across Inverell, Guyra and Glen Innes saleyards (fortnightly sales). 5 lameness investigations	Nil reported
Riverina	Weekly walk-through inspections at Wagga Wagga & Griffith saleyards. Fortnightly walk-through inspections at Cootamundra. Lameness and trace investigations on farm.	1 x newsletter article (May 2023).

LLS Region	Surveillance	Extension & Advisory
South East	29 lameness investigations with 22 VFR exclusions. 10 saleyard inspections (Yass). Lameness and trace investigations on farm.	2 seasonal update newsletter articles
Western	No saleyards in region so no inspections 2 trace investigations	No specific advisory and extension services.

Definitions and abbreviations

BFR	Benign Footrot
BO	Biosecurity Officer of Local Land Services
CTLX	Central Tablelands Livestock Exchange
DPI	NSW Department of Primary Industries
DV	LLS District Veterinarian
EMAI	Elizabeth Macarthur Agricultural Institute
FTE	Full-time equivalent
IBD/U	Individual Biosecurity Direction/Undertaking
LHMS	Livestock health management system
LLS	Local Land Services
PIC	Property Identification Code
VFR	Virulent Footrot

References

Procedure – Virulent footrot in sheep and goats (INT21/66194)

Footrot Manual (INT21/66341)

Published by the Department of Primary Industries and Regional Development

NSW Footrot Program – 2023 Report

More information

NSW DPIRD

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Acknowledgements

The Footrot program is a collaboration between the NSW Department of Primary Industries and Regional Development, Local Land Services and the NSW Sheep and Goat Industry.

© State of New South Wales through DPIRD 2024. The information contained in this publication is based on knowledge and understanding at the time of writing August 2024. However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of the DPIRD or the user's independent adviser.