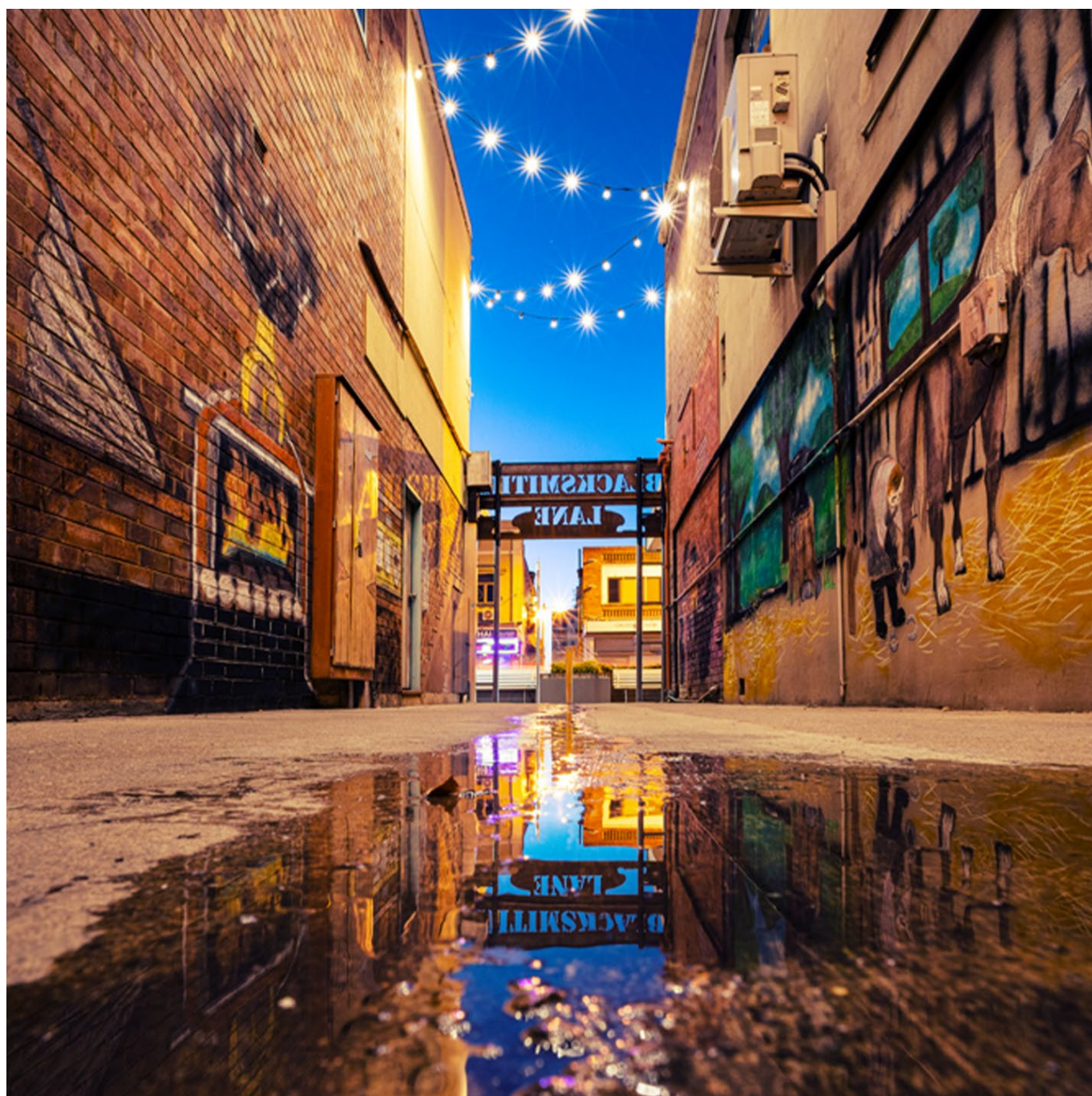


NSW Footrot Program 2022 Annual Report

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Introduction

Footrot is a contagious bacterial disease of sheep and goats, caused by the organism *Dichelobacter nodosus* (*D. nodosus*) in association with a number of other bacteria. 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 eradication focussed 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% as a result of increased reporting by graziers and better disease intelligence. By 2009, the whole of NSW was declared a Protected Area and the strategic plan goal of maintaining the prevalence of virulent footrot at less than 1% of flocks has been achieved ever since. State-wide prevalence, as percent of sheep flocks with >50 head under a biosecurity direction for virulent footrot, was 0.6% in December 2022. Only one goat herd with >50 head was under an IBD for virulent footrot in 2022, so goats are presented separately and are not included in the overall PIC count.

Ongoing surveillance and response activities have maintained a relatively low prevalence of virulent footrot. However, it remains a disease risk to 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, and reduced value of sale sheep. On farm management strategies, including foot bathing and vaccination, can control the disease during transmission and expression periods.

This report provides an overview of the NSW Footrot Program in 2022 and was compiled by NSW DPI from information submitted by each Local Land Services (LLS) region and from the PowerBI Dashboards derived from LHMS records. The report reflects the available information as of April 2023 for the calendar year 2022. Difficulties in extracting appropriate data from the record management system may have impacted the accuracy of some information.

Prevalence and distribution of virulent footrot cases across NSW

As of end December 2022, 90 flocks with >50 head sheep and/or goats in NSW were diagnosed as being infected with VFR and were thus subject to an Individual Biosecurity Direction (IBD). The IBD includes several conditions including the development of an approved footrot eradication plan and movement restrictions requiring all animals be sold direct to slaughter. The 90 infected flocks represent 0.6% of the sheep flocks in NSW, 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 2022

LLS Region	Flocks under IBD at end of 2022 (>50 head)	Sheep flocks >50hd ^{a,b}	Flocks under IBD as % flocks >50hd
Central Tablelands	20	2105	1.0%
Central West	18	3247	0.6%
Greater Sydney	0	29	0.0%
Hunter	0	137	0.0%
Murray	14	1263	1.1%
North Coast	0	13	0.0%
North West	1	905	0.1%
Northern Tablelands	0	1201	0.0%
Riverina	18	3132	0.6%
South East	19	2739	0.7%
Western	0	786	0.0%
TOTAL	90	15557	0.6%

^aAs reported in the 2022 Local Land Services Annual Land and Stock Return data

^bOnly one property is under IBD for VFR with >50 head of goats. Therefore only sheep flocks are included in this count.

Whilst the overall prevalence of VFR in NSW is 0.6%, the prevalence of VFR within individual LLS regions varies across the state. Five regions had no cases of VFR in flocks or herds with >50 head - the Greater Sydney, Hunter, Western, Northern Tablelands and North Coast LLS regions. Central West, Riverina, and South East LLS had a prevalence of 0.6%-0.7%. Murray and Central Tablelands had a prevalence of $\geq 1\%$ of all sheep flocks >50 head. 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 2022, there were four PICs with goats under IBD for VFR but each had <20 susceptible animals.

Southern and eastern regions of the state continue to experience a higher prevalence of VFR than regions across the north and west of NSW. There was a 0.6% prevalence across sheep flocks with >50 head in Central West, 0.6% in Riverina, 0.7% in South East, 1% in Central Tablelands, and 1.1% in the Murray. Figure 1 shows that four of the 11 LLS regions manage 83% of the VFR infected flocks in NSW.

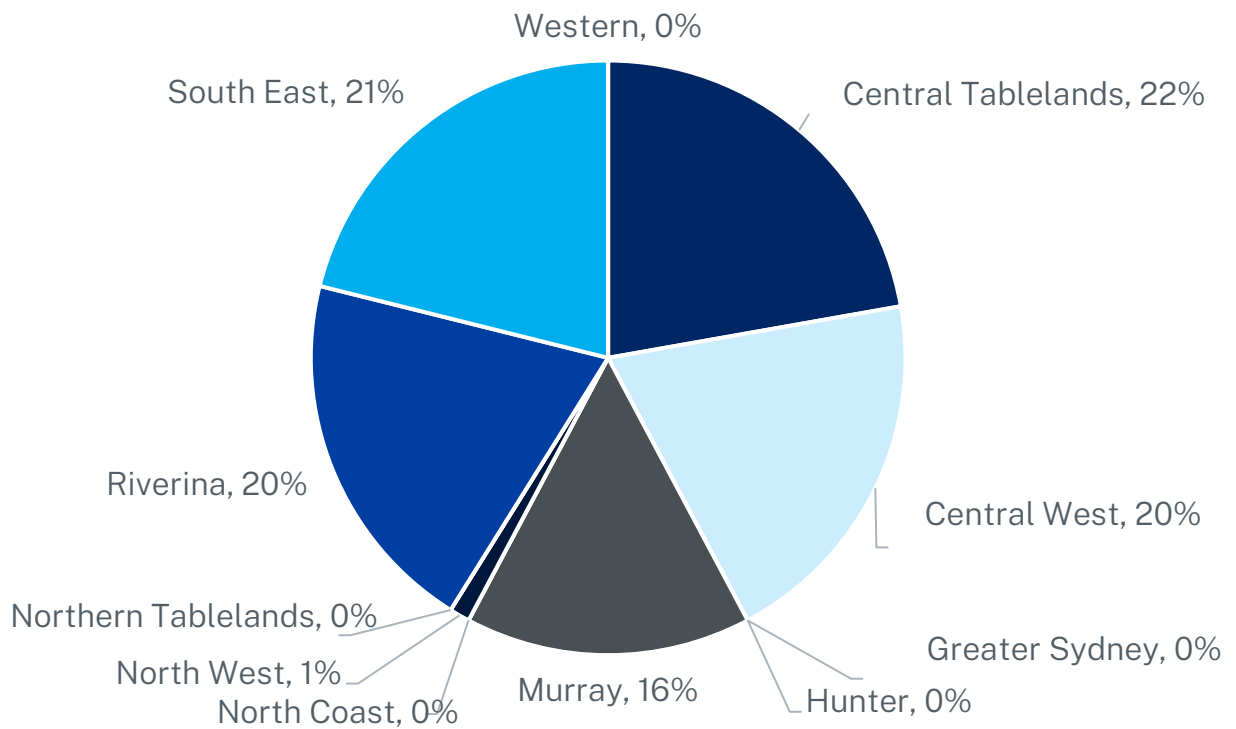


Figure 1 Distribution of virulent footrot cases between regions (at end December 2022)

Footrot diagnoses in 2022: benign and virulent

In 2022 there were 59 PICs newly diagnosed with VFR and 126 newly diagnosed with BFR as a result of field investigations by LLS (Figure 2). The number of benign cases was slightly higher than in 2021. Virulent footrot diagnoses decreased slightly from 73 in 2021 to 59 in 2022. Both years are substantially higher though than the previous three years. The sustained higher numbers of VFR diagnoses is likely due to seasonal conditions favourable for spread and expression of the disease, with widespread rainfall and flooding throughout many sheep producing regions of NSW. Additionally, interjurisdiction sheep movements and sheep movements in general have been sustained throughout this time.

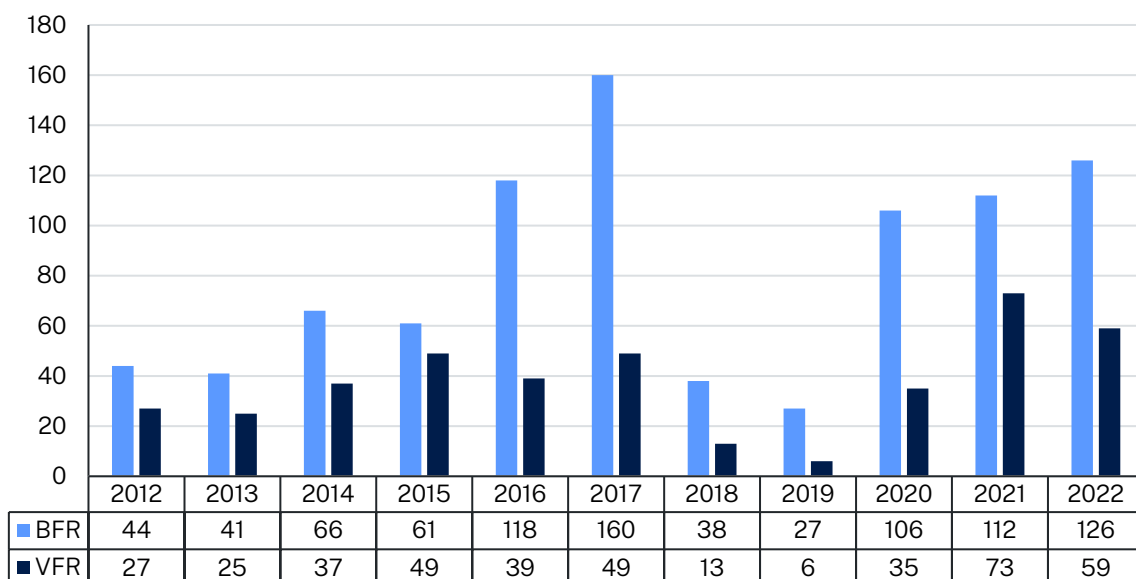


Figure 2 Annual benign footrot (BFR, pale blue) and virulent footrot (VFR, dark blue) diagnoses by LLS since 2012 (as recorded in LHMS)

PICs released from Individual Biosecurity Directions for VFR in 2022

Twenty flocks were released from an IBD in 2022 having achieved freedom from VFR, either through completing an eradication program involving the 'tip and cull' process or through destocking, or a combination thereof.

The releases were concentrated in the first and fourth quarter of the year, as shown in Table 2. The majority of the releases occurred in the higher VFR prevalence LLS regions, including Murray and Riverina.

Seasonal conditions of high rainfall, abundant pasture availability and contractor availability in 2022 presented significant challenges for undertaking 'tip and cull' eradication programs on properties under IBD for VFR.

Table 2 PICs released from IBD for VFR in 2022, across all LLS regions

LLS Region	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Total
Central Tablelands	1	0	0	2	3
Central West	0	1	1	2	4
Greater Sydney	0	0	0	0	0
Hunter	0	0	0	0	0
Murray	3	0	1	0	4
North Coast	0	0	0	0	0
North West	1	0	0	0	1
Northern Tablelands	0	0	0	0	0
Riverina	4	1	0	0	5
South East	0	0	1	2	3
Western	0	0	0	0	0
TOTAL	9	2	3	6	20

Virulent footrot case duration

At the end of December 2022, 43% of VFR infected flocks had been under an IBD for less than one year and another 42% had been under an IBD for 1-2 years. Ten percent (9/94) had been under IBD for 2-3 years. The remaining three flocks (3%) had been under IBD or other restriction for >3 years (2015, -16 and -17 diagnoses respectively). Reasons cited for the flocks remaining under restrictions in excess of three years included ability of the producer to conduct the eradication program (age and illness were offered as explanations), gradual flock dispersal rather than sudden eradication, and the case being a 'cold case'. 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 (2022)	1-2 years (2021)	2-3 years (2021-2020)	>3 years (pre-2019)	Total no. of flocks
Central Tablelands	5	12	3	0	20
Central West	8	8	2	0	18
Greater Sydney	0	0	0	0	0
Hunter	0	0	0	0	0
Murray	9	5	0	0	14
North Coast	0	0	0	0	0
North West	0	0	0	1 (2017 case)	1
Northern Tablelands	0	0	0	0	0
Riverina	8	8	2	0	18
South East	9	6	2	2 (2015, 2016)	19
Western	0	0	0	0	0
TOTAL	39	39	9	3	90
% total flocks under IBD at end December 2022	43%	42%	10%	3%	

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 DPI.

There were 85 laboratory submissions to EMAI associated with footrot diagnosis in 2022. The number of submissions per month, shown in Figure 3, peaked at 13 submissions in early summer (December 2022) and was lowest in late winter (August 2022). Submissions were relatively stable throughout the rest of 2022, oscillating between 8 and 5 a month.

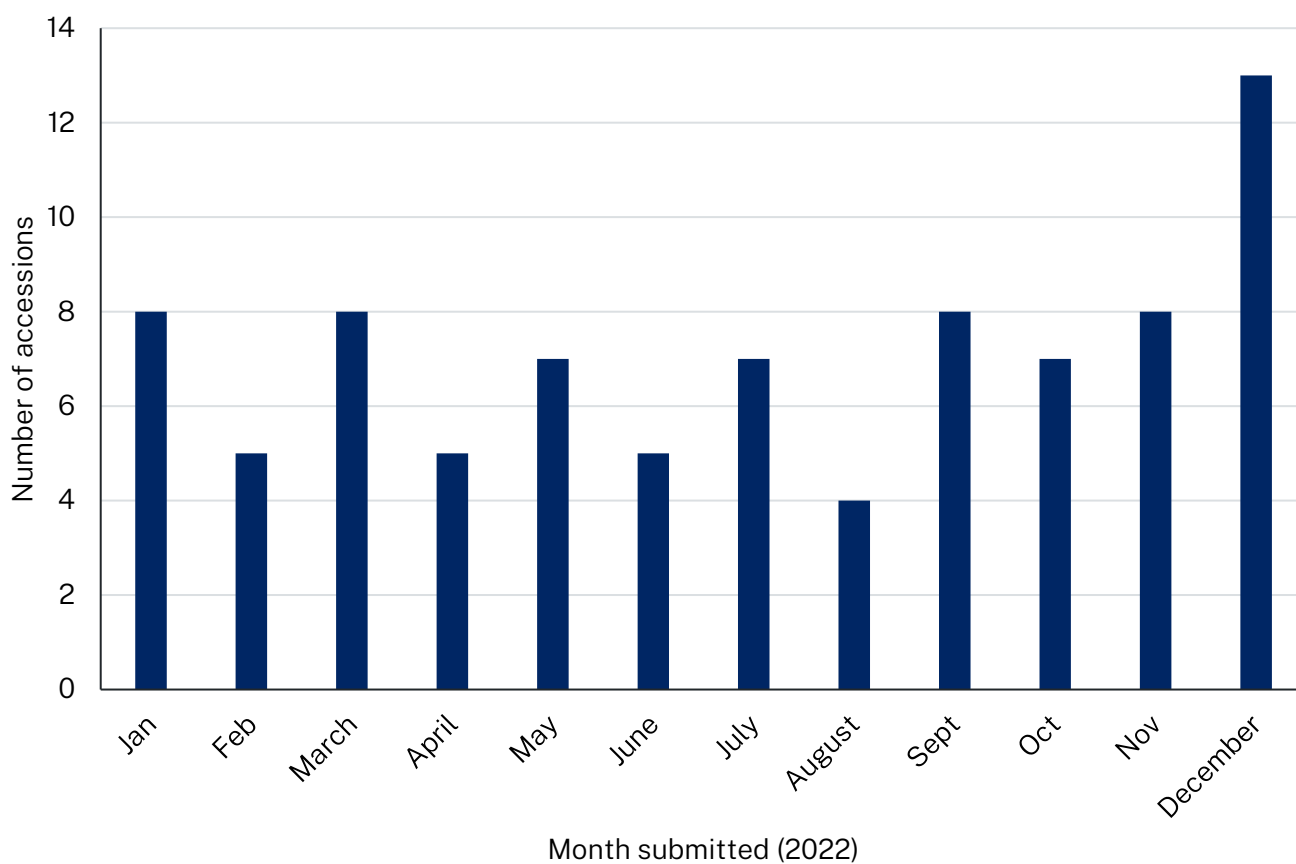


Figure 3 Laboratory submissions to EMAI (NSW DPI) associated with footrot diagnosis in 2022 (request for *D. nodosus* culture and elastase testing)

Resourcing

The NSW Footrot Program is primarily managed by NSW DPI 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, including flooding, resulted in difficulties in completing footrot related work over 2022.

Local Land Services

- **Central Tablelands:** 2 full time equivalent (FTE) district vet (DV) and 1 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 2022 (insufficient to monitor hours spent)
- **Hunter:** 2 x DV, 1 x BO for 1 day on farm, 1 x DV for 1 day for contact with O and PV
- **Murray:** 0.8 FTE DV (0.2 FTE of each DV x 4) and 1 BO (0.5 FTE BO x 2)
- **North Coast:** nil resourcing of program as no demand
- **North West:** 2 FTE for 10 days (for traces)
- **Northern Tablelands:** 3 x BO's spend 5% of time at saleyards; 2 FTE for 3 weeks for routine autumn survey; other surveillance and investigation: 1 FTE DV x 2 wks
- **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 5 days for traces and exclusions
- **State LLS:** DPI BFS Animal Biosecurity Business Partner involvement as required
- **NSW Footrot Steering Committee** - 2 x 0.5 day meetings annually (including preparatory reading): 1 x business partner, 1 x DV representative, 1 x managing director
- **NSW Footrot Internal Working Group** - 2-3 x 0.25 day meetings annually (including preparatory reading): 1 x Business Partner, 2 x DV, 1 x Team Lead

NSW Department of Primary Industries

- **Foot program coordinator** – approx. 0.4 FTE Veterinary Policy & Project Officer annually, includes role as Executive Officer of Footrot Steering Committee
- **NSW Footrot Steering Committee** - 2 x 0.5 day meetings annually (including preparatory reading): 1 x CVO representative
- **NSW Footrot Internal Working Group** - 2-3 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 had either 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 2022 are outlined in Table 4.

Table 4 Field surveillance, extension and advice provided by each LLS region in 2022 (as reported by Team Lead Animal Biosecurity and Welfare from each LLS region)

LLS Region	Surveillance	Extension & Advisory
Central Tablelands	75% of all sales Cowra, Mudgee and CTLX attended by DV or biosecurity officers. General lameness investigations.	1 x footrot webinar for Sheep Connect, contribution to Sheep Connect footrot booklet, 1 x presentation on footrot at ag consultants meeting, 2 x newsletter articles
Central West	Weekly surveillance at both Dubbo and Forbes sheep sales	LLS newsletter articles In the Loop article (private vets)
Greater Sydney	Nil reported	Nil reported
Hunter	No dedicated sheep saleyards. Sheep occasionally sold via other yards. Lameness sheep examined (if observed). One investigation where all sheep tipped in a flock to exclude VFR (referred by private vet)	Newsletter articles
Murray	Corowa (weekly), Deniliquin (every two weeks) and Finley (every month) saleyard walk throughs. Follow up traces (forward and back). Lameness investigations on farm.	Three articles that considered footrot, including one quiz. Supporting 2 contractors to become accredited.
North Coast	No surveillance activities, no routine sheep sales	Nil
North West	Small number of traces into NW e.g. 4 staff checked 100 sheep as trace forward from other region. 10 VFR on property exclusions. Releases.	2 social media posts 1 newsletter article
Northern Tablelands	Survey of 25 flocks in autumn 2022 (no VFR, >28 d elastase). 30 visits across the 3 saleyards that sell sheep fortnightly. 5 lameness investigations.	Distributed new footrot booklets to local private vets for further distribution to producers. Social media on lameness in sheep.
Riverina	Weekly walk-through inspections at Wagga wagga & Griffith saleyards. Fortnightly walk through at Cootamundra. Lameness investigations on farm.	1 x footrot workshop (Sep 2022). 1 x radio interview (ABC). 1 x newsletter article (Feb 2022). 1 x field day with 1:1 producer discussions (Aug/Sep 2022).

LLS Region	Surveillance	Extension & Advisory
South East	29 lameness investigations with 22 VFR exclusions. Regular saleyard attendance at SELX Yass. Inspect if lameness or odour observed.	3 media publications 7 face-to-face workshops with VFR content (and other activities)
Western	No saleyards in region so no inspections. No surveys. DV lameness investigations.	No specific advisory and extension activities but 1 x producer workshop where VFR was discussed (Spring 2022). VFR discussed at FMD forums (1 x Broken Hill, 1 x Ivanhoe).

Definitions and abbreviations

- BFR: benign footrot
- BO: biosecurity officer of Local Land Services
- DPI: NSW Department of Primary Industries
- DV: district veterinarian of Local Land Services
- EMAI: Elizabeth Macarthur Agricultural Institute
- FTE: full-time equivalent
- IBD: Individual Biosecurity Direction
- 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)

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