SURVEILLANCE OF INFECTIOUS DISEASES

IN ANIMALS AND HUMANS IN SWEDEN 2022

Chapter excerpt:
Footrot

SVA NATIONAL VETERINARY INSTITUTE

Jordbruks verket
Swedish Board of Agriculture

Folkhälsomyndigheten
PUBLIC HEALTH AGENCY OF SWEDEN

Livsmedelsverket
Swedish Food Agency

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Cover: A cultivation of *Salmonella* at the Public Health Agency of Sweden.
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Reporting guidelines: Reporting guidelines were introduced in 2018 for those chapters related to purely animal pathogens. The guidelines build on experiences from several EU projects, and have been validated by a team of international experts in animal health surveillance. The aim is to develop these guidelines further in collaboration within the global surveillance community and they have therefore been made available in the form of a wiki on the collaborative platform GitHub (https://github.com/SVA-SE/AHSURED/wiki). Feel free to contribute!

Layout: The production of this report continues to be accomplished using a primarily open-source toolset. The method allows the source text to be edited independently of the template for the layout which can be modified and reused for future reports. Specifically, the chapter texts, tables and captions are authored in Microsoft Word and then converted to the LaTeX typesetting language using a custom package written in the R software for statistical computing. The package uses the pandoc document conversion software with a filter written in the lua language. Most figures and maps are produced using R and the LaTeX library pgfplots. Development for 2022 has focused on generalising the R package to accommodate conversion into formats other than LaTeX and PDF, with a focus on markdown files which can be published as HTML websites using the Quarto publishing system. The report generation R package and process was designed by Thomas Rosendal, Wiktor Gustafsson and Stefan Widgren.

Print: TMG Tabergs AB

Suggestion citation: Surveillance of infectious diseases in animals and humans in Sweden 2022, National Veterinary Institute (SVA), Uppsala, Sweden. SVA:s rapportserie 89 1654-7098

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Footrot

Figure 19: Lameness is a typical sign of footrot. Photo: Ylva Persson.

BACKGROUND

Footrot is a globally distributed contagious disease in sheep and goats. The causative agent is *Dichelobacter nodosus* (*D. nodosus*). The disease is characterised by interdigital necrotising inflammation with underrunning of part or all the soft horn of the heel and the sole. Predisposing factors are humid and warm weather conditions. The severity of footrot can vary by the strain of *D. nodosus* and the environmental conditions.

The first case of footrot in Swedish sheep was identified in 2004. Data on all affected flocks have been recorded since 2004. A voluntary control programme for footrot ("Klövkontrollen") was established by Farm & Animal Health in 2009. Within the programme, the definition of footrot is when virulent strains of *D. nodosus* are detected with or without clinical lesions or when benign strains are detected together with clinical lesions.

DISEASE

The clinical signs of the disease are typically foot lesions, and lameness due to the painful lesions. However, lameness is not a consistent clinical sign in affected sheep. Footrot varies greatly in severity from inflammation of the interdigital skin to complete underrunning of hoof horn.

LEGISLATION

Footrot (virulent strains of *D. nodosus*) is a notifiable disease in Sweden (SJVFS 2021:10).

SURVEILLANCE

The aim of the control programme is to eliminate footrot from affected sheep flocks and to provide certification of freedom from footrot for the sheep trade. Another important part of the programme is training of veterinarians and non-veterinary staff to perform clinical inspection and footrot scoring. The feet of sheep are inspected by veterinarians and farmers on an annual basis. The inspections are performed from August 15 to October 15, when the risk of footrot is highest due to the weather conditions. For all newly affiliated flocks and for all affiliated flocks with clinical signs suspecting footrot, a real-time PCR is used for detecting *D. nodosus* and determining strain virulence.

Flocks in which no clinical signs of footrot or virulent strains of *D. nodosus* are detected in any of the adult sheep

are certified as free (F-status). If signs of footrot (virulent strains with or without clinical lesions or benign strains with clinical lesions) are detected, measures to eliminate footrot are undertaken, including foot baths in zinc sulphate and, if necessary, antibiotic treatment, moving of animals to clean pasture and culling of chronically infected sheep. Flocks with a history of footrot can be certified as free at the earliest ten months after the last signs of infection.

396 (out of a total of 8282) sheep flocks are affiliated to the control programme. Most of the top pedigree flocks in Sweden are affiliated to the programme.

RESULTS

In 2022, footrot was confirmed in 3 new flocks within the control programme (Figure 20). In these flocks, benign strains of D. nodosus were detected. No virulent strain was reported to the authorities. In the programme, 384 flocks were certified free from footrot (F-status). Actions for veterinary advice for elimination were not taken in the three flocks with footrot. Actions for elimination are voluntary (hence why not all positive flocks undergo elimination procedures). A field study of the prevalence of footrot and contagious ovine digital dermatitis in adult sheep was performed in September. The prevalence of footrot was 0.7% on individual level and 2.0% on flock level.

DISCUSSION

The control programme demands quarantine before new animals can enter the flock, and hence the awareness of biosecurity and disease control in general has been enhanced in the sheep farming community. Since most of the pedigree flocks are affiliated, the impact of the programme is significant although they represent a minority of sheep flocks in Sweden. The sheep farmers association's agreement on a trade ban from infected flocks has been essential to the programme's success. Good collaboration between authorities, the academia, veterinarians, and individual sheep farmers has resulted in a cost-effective control programme. The new real-time PCR can discriminate between benign and virulent strains. This typing might make it possible to limit mandatory notification to virulent strains of footrot. During 2021, the control programme was evaluated by the National Veterinary Institute (SVA) and Farm & Animal Health for more cost-effective sampling, diagnostics and control measures.

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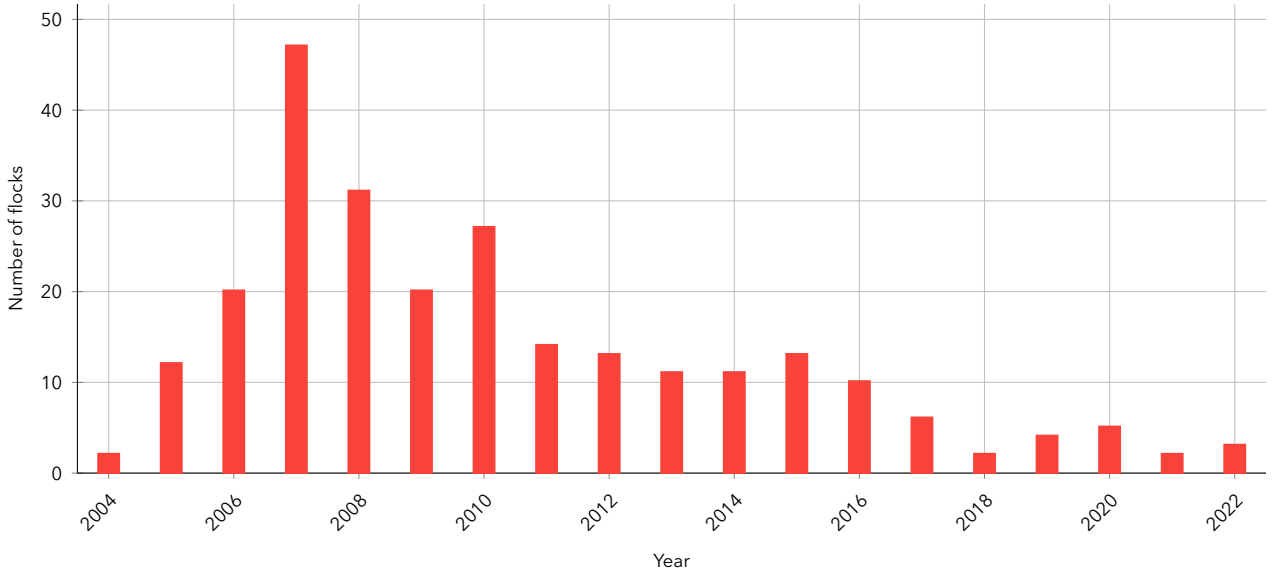

Figure 20: Number of sheep flocks with detected footrot within the programme, 2004–2022.