Surveillance programmes for terrestrial and aquatic animals in Norway
Norwegian Veterinary Institute

*Annual Report · 2015*

# The surveillance programme for footrot in Norway 2015

Veterinærinstituttet
Norwegian Veterinary Institute

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## Annual report 2015

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# The surveillance programme for footrot in Norway 2015

*Annette H. Kampen, Lene Hermansen, Bjarne Bergsjø, Petter Hopp, Synnøve Vatn (Animalia), Tore Tollersrud*

***In 2015, approximately 92,500 sheep were inspected for footrot. A total of 221 animals originating from 99 different flocks were examined by PCR. Virulent strains of the bacterium* D. nodosus *were detected in six sheep originating in three different flocks.***

## Introduction

Ovine footrot is an infectious disease of sheep and is caused by the bacterium *Dichelobacter nodosus*. The severity of disease varies and is dependent on the breed of sheep, environmental factors and bacterial variant. *D. nodosus* strains are divided into so-called benign and virulent variants. In Norway, disease caused by virulent variants (severe footrot) is a notifiable disease (List B). The control of this disease is enforced by government legislation and restrictions on animal movement.

Since 1948, footrot had not been detected in Norway until the bacterium was detected in a single herd with lameness in 2008. Clinical footrot was detected in other flocks later the same year. All sheep flocks in the counties of Rogaland, Aust-Agder and Vest-Agder, more than 250,000 animals, were then included in the project "Turn the sheep" launched by the industry. *D. nodosus* was detected by PCR in more than 500 flocks, but at that time no laboratory methods were available in Norway to differentiate between benign and virulent strains.

In 2009, the project "Healthy feet" was launched as a collaborative project between the industry, the Norwegian Food Safety Authority and the Norwegian Veterinary Institute. The goal was to eradicate severe ovine footrot in Norway. The project terminated end 2014. In this project, more than 400,000 examinations of sheep originating from approximately 4,500 flocks was performed in the field, and approximately 190,000 animals was inspected at slaughterhouses (1).

A national surveillance programme for footrot in sheep was established in 2014 (based on methods already used in the "Healthy feet" project). In addition to the surveillance programme, footrot is also sometimes detected via clinical investigations. Any positive findings will be followed up and contacts will be traced.

## Aim

The aim of the surveillance programme for ovine footrot is to detect flocks with virulent strains of *D. nodosus* in sheep.

## Material and methods

The feet of approximately 92,500 sheep were inspected by specially trained staff at six slaughterhouses in Southern Norway. There were 144 inspection days at five slaughterhouses in areas were footrot had occurred, i.e. the Counties of Rogaland and Aust-Agder. In addition, six inspection days were used at one abattoir situated in the County of Buskerud.

Samples for bacterial examination were collected from sheep feet showing clinical signs in agreement with footrot. Normally three samples were collected from the same flock to secure the diagnosis, normally by sampling two feet of the first animal with symptoms and one foot from another animal. In addition, two samples should be collected each inspection day if no sheep with clinical signs was found at the slaughterhouses situated outside the County of Rogaland.

Samples were analysed using a 16rRNA real-time PCR for the detection of *D. nodosus* and then positive samples were further analysed using a duplex real-time PCR to differentiate between benign and virulent strains of *D. nodosus*.

## Results

A total of 310 different samples from 221 animals originating from 99 different flocks were examined by PCR. Virulent strains of *D. nodosus* were detected in six sheep from three different flocks.

**Table 1.** Number of inspection days at abattoirs and number of samples examined with PCR and the corresponding result for the Norwegian surveillance programme for virulent footrot in sheep from 2014 to 2015.

| Year | N°. of inspection days at abattoirs | Estimated N°. of inspected carcasses | N°. examined by PCR | | Positive | |
|---|---|---|---|---|---|---|
| | | | Animals | Samples | Animals | Flocks |
| **2014** | 150 | 121 000 | 150 | 172 | 0 | 0 |
| **2015** | 150 | 92 500 | 221 | 310 | 6 | 3 |

## Discussion

The low number of clinical findings in the slaughterhouse based surveillance indicate that the occurrence of severe footrot is low, and that the probability of the disease being spread outside Rogaland and Aust-Agder is very low (2).

Despite the fact that less animals were inspected in 2015, the number of sampled animals were significantly higher. This might be due to more rain in the surveillance period in 2015 than in 2014. The majority of the sampled animals had benign strains of *D. nodosus*. Moisture is necessary for the development for clinical symptoms, hence the number of animals with symptoms of footrot are found and sampled in the abattoirs.

In addition to the three new flocks detected in the surveillance programme, three other flocks were positive in 2015. The latter three were flocks that had been infected with virulent strains previously and had performed eradication as part of the Healthy feet project. Unfortunately these were either reinfected or the eradication was not successful. It is important to have continued awareness of footrot in a clinical setting as well as to continue the active surveillance in order to reach the goal of eradicating virulent footrot from Norway.

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The Norwegian Veterinary Institute (NVI) is a natiton-wide biomedical research institute and Norway's leading centre of expertise regarding biosafety in aquatic and terrestrial animals. The aim of the Institute is to become Norway's contingency centre of preparedness for One Health.

The primary mission of the NVI is to give research-based independent advisory support to ministries and governing authorities. Preparedness, diagnostics, surveillance, reference functions, risk assessments, and advisory and educational functions are the most important areas of operation. The Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad and Tromsø, with about 330 employees in total.

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The Norwegian Food Safety Authority (NFSA) is a governmental body whose aim is to ensure through regulations and controls that food and drinking water are as safe and healthy as possible for consumers and to promote plant, fish and animal health and ethical farming of fish and animals.

We encourage environmentally friendly production and we also regulate and control cosmetics, veterinary medicines and animal health personnel. The NFSA drafts and provides information on legislation, performs risk-based inspections, monitors food safety, plant, fish and animal health, draws up contingency plans and provides updates on developments in our field of competence. The NFSA comprises two administrative levels, five regions in addition to the head office, and has some 1250 employees. The NFSA advises and reports to the Ministry of Agriculture and Food, the Ministry of Trade, Industry and Fisheries and the Ministry of Health and Care Services.

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