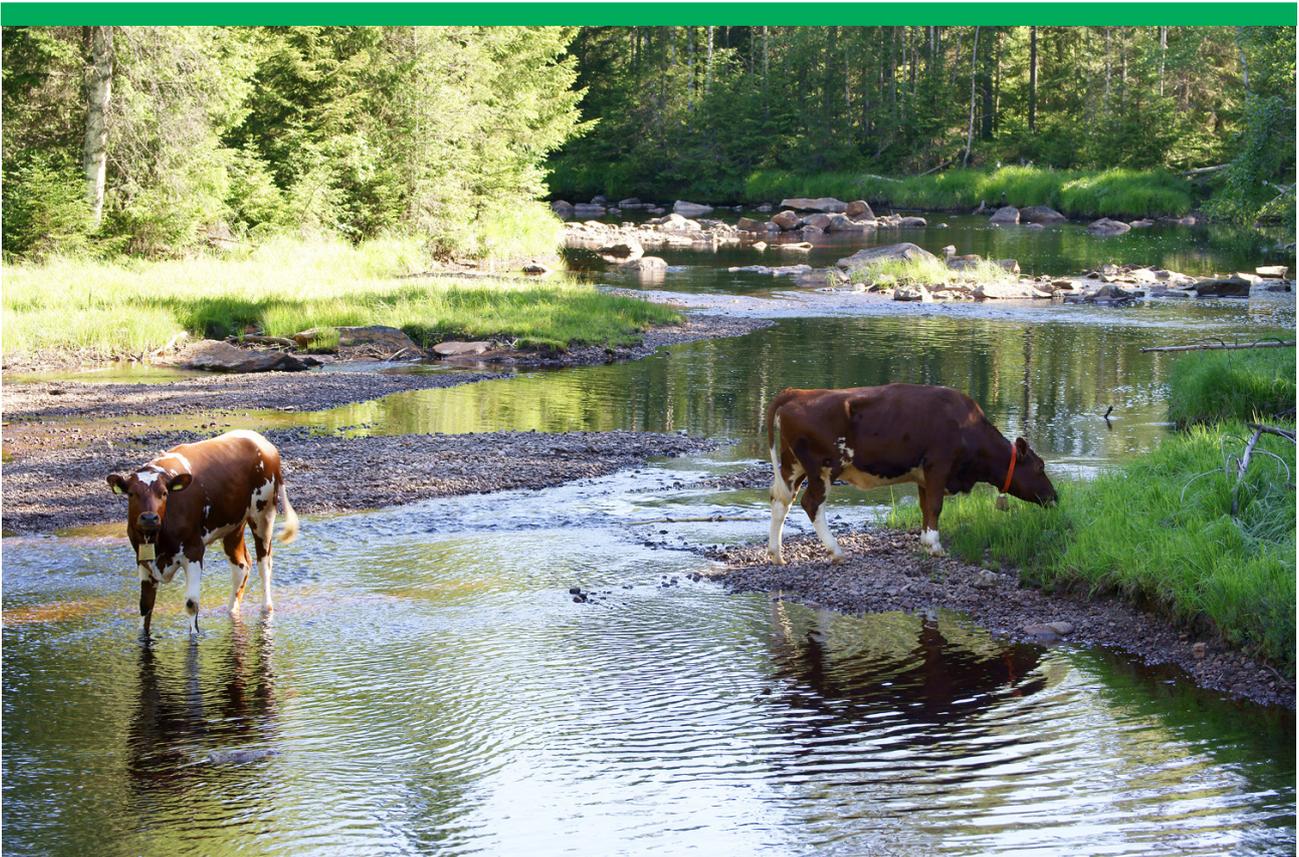


The surveillance programme for bovine tuberculosis in Norway 2018



Veterinærinstituttet
Norwegian Veterinary Institute



The surveillance programme for bovine tuberculosis in Norway in 2018

Content

Summary	3
Introduction	3
Aim	3
Materials and methods	3
Submission of material from slaughterhouses and <i>post mortem</i> examinations.....	3
Histopathological examination	3
Bacteriological examination	3
Results and discussion	4
References	4

Authors
Ståle Sviland, Petter Hopp,
Girum Tadesse Tessema

Commissioned by
Norwegian Food Safety Authority



ISSN 1894-5678

© Norwegian Veterinary Institute 2019

Design Cover: Reine Linjer
Photo front page: Colourbox

Summary

In 2018, samples from one bovine, one llama and eight alpacas were submitted for *Mycobacterium* spp. examination. *Mycobacterium bovis* was not detected in any of the samples.

Introduction

Apart from two single-herd outbreaks in Sogn og Fjordane county in 1984 and 1986 Norway has been considered free from bovine tuberculosis since 1963 (1). Since 1994, the EFTA Surveillance Authority (ESA) has recognised Norway as officially free from bovine tuberculosis, as described in ESA Decision 225/96/COL replacing ESA Decision 67/94/COL.

In 2000, a surveillance programme for bovine tuberculosis in cattle was launched. It includes compulsory veterinary inspection of all bovine carcasses at slaughter, with submission of suspicious materials to the Norwegian Veterinary Institute for further examination. Farmed deer found dead or euthanized sick animals should be reported to the Norwegian Food Safety Authority which provides *post mortem* examination of the animals. Organs with lesions consistent with tuberculosis should be submitted to the Norwegian Veterinary Institute for further examination. In 2014, South American camelids (SACs) were included in the programme. Similarly to farmed deer, dead or euthanized llamas and alpacas should be subject to *post mortem* examination and suspicious organs are examined for *Mycobacterium bovis*.

Aim

The aims of the programme are to document absence of bovine tuberculosis, according to Directive 64/432/EEC with amendments, and to contribute to the maintenance of this favourable situation.

Materials and methods

Submission of material from slaughterhouses and *post mortem* examinations

Lung tissue, lymph nodes and other organs with pathological lesions compatible with bovine tuberculosis, are submitted for examination.

The Norwegian Food Safety Authority collects the samples during routine meat inspection. The Norwegian Veterinary Institute performs most of the *post mortem* examinations of the farmed deer and SACs. Some necropsies are done in the field. If the result does not demonstrate any pathological lesions consistent with tuberculosis, no further examination will be done.

Histopathological examination

Tissues are fixed in 10% neutral phosphate-buffered formalin for more than 24 hours, processed according to a standard routine protocol, embedded in paraffin, sectioned at 5 µm and stained with haematoxylin and eosin and Ziehl-Neelsen.

Bacteriological examination

Samples are examined as described in the OIE manual (2). Samples are homogenised, decontaminated with 5% oxalic acid and centrifuged. The sediment is used for culturing and for microscopic examination for acid-fast bacilli. The sediment is inoculated onto slopes of Löwenstein Jensen medium, Stonebrink's medium, Middelbrook 7H10 medium with and without antibiotics supplement, and Dubos medium. The slopes are incubated under aerobic conditions at 37°C for two months and checked every week for growth of acid-fast bacilli, determined by the Ziehl-Neelsen method. If colonies of acid-fast bacilli are detected, molecular methods are used for species identification.

Results and discussion

Table 1 shows the number of samples submitted and the number of positive samples since the programme started in 2000. In 2018, samples from one bovine carcass, one llama and eight alpacas were submitted.

The low number of submitted samples indicates a low prevalence of suspicious pathological lesions. Continuous surveillance by veterinary meat inspection, early and effective eradication campaigns, combined with restricted import of live cattle, have contributed significantly to this situation.

Table 1. Samples submitted for testing of bovine tuberculosis from 2000 to 2018, and number of positive samples.

Year	No. of cattle samples	No. of cattle herds	No. of positive cattle samples	No. of camelid samples	No. of camelid herds	No. of positive camelid samples
2000	0	0	0			
2001	3	3	0			
2002	0	0	0			
2003	1	1	0			
2004	4	4	0			
2005	1	1	0			
2006	3	3	0			
2007	0	0	0			
2008	4	2	0			
2009	1	1	0			
2010	1	1	0			
2011	1	1	0			
2012	0	0	0			
2013	5	4	0			
2014	1	1	0	1	1	0
2015	2	2	0	15	14	0
2016	3	3	0	11	10	0
2017	1	1	0	14	12	0
2018	1	1	0	9	9	0

References

1. Sandvik O. Animal Health Standards in Norway. Næss B (editor). Oslo: The Royal Ministry of Agriculture; 1994.
2. Office International des Epizooties.
http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/2.04.06_BOVINE_TB.pdf

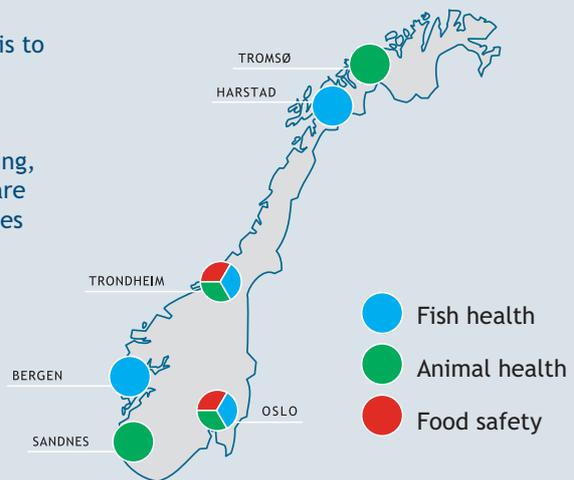
*Scientifically ambitious, forward-looking and cooperatively oriented
– for integrated health*

The Norwegian Veterinary Institute is a national research institute that operates in the fields of animal and fish health, food safety and feed hygiene; its primary task is to provide the authorities with independently generated knowledge.

Emergency preparedness, diagnostic services, monitoring, reference functions, consulting, and risk assessments are all important areas of activity. Our products and services include research results and reports, analyses and diagnoses, studies and advice.

The Norwegian Veterinary Institute's central laboratory and administration lie in Oslo, and we operate regional laboratories in Sandnes, Bergen, Trondheim, Harstad and Tromsø.

The Norwegian Veterinary Institute collaborates with a large number of national and international institutions.



Fish health



Animal health



Food safety



Oslo
postmottak@vetinst.no

Trondheim
vit@vetinst.no

Sandnes
vis@vetinst.no

Bergen
post.vib@vetinst.no

Harstad
vih@vetinst.no

Tromsø
vitr@vetinst.no

www.vetinst.no



Veterinærinstituttet
Norwegian Veterinary Institute