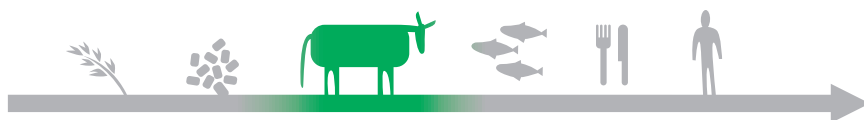


# The surveillance programme for bluetongue in Norway 2016



**Veterinærinstituttet**  
Norwegian Veterinary Institute

# The surveillance programme for bluetongue in Norway 2016

## Content

Summary .....	3
Introduction .....	3
Aim .....	3
Materials and methods .....	3
Results and discussion .....	4
References .....	4

---

### Authors

Johan Åkerstedt, Ståle Sviland, Petter Hopp

ISSN 1894-5678

© Norwegian Veterinary Institute 2017

Design Cover: Reine Linjer

Photo front page: Colourbox

## Summary

All bulk milk samples tested in 2016 were negative for antibodies against bluetongue virus serotype 8.

## Introduction

Bluetongue is a disease caused by Bluetongue virus (BTV) which comprises 24 serotypes (BTV 1-24). The virus is insect-borne and midges of genus *Culicoides* transmit BTV to susceptible ruminants, after being infected by feeding on viraemic animals. After replication in the insect's salivary glands, which depends upon ambient temperature, the virus can be transmitted to new vertebrate hosts. Therefore, infection has a seasonal occurrence (1).

In 2006 an outbreak of bluetongue serotype 8 (BTV 8) started in the Netherlands and rapidly spread among the ruminant population in the European countries the following years. A surveillance programme for BTV 8 based on bulk milk serology was conducted in 2008. Four cattle herds in the southern part of Norway were seropositive for BTV 8. After two years of comprehensive monitoring and surveillance of BTV 8 without any further discovery of infected herds, Norway regained free status for bluetongue. The surveillance programme for BTV could be reduced to a small programme based on bulk milk serology (2-4).

The Norwegian Food Safety Authority was responsible for carrying out the surveillance programme for bluetongue. The Norwegian Veterinary Institute was in charge of designing the programme, collecting the bulk milk samples from the dairies and performing the tests.

## Aim

The aim of the surveillance programme for bluetongue is to document freedom from the infection in Norway according to the demands in Regulation (EC) No.1266/2007, Annex 1.1.2, and to contribute to the maintenance of this favourable situation.

## Materials and methods

The target population of dairy herds consisted of all cattle herds delivering milk to dairies during the sampling period in November, after the end of the vector season. Bulk milk samples were collected from 526 dairy herds from counties in the southern part of Norway. The number of herds per county and the number of herds selected in the surveillance programme for bluetongue in 2016 is given in Table 1.

**Table 1.** Number of dairy herds in 2016 and numbers of dairy herds tested in the surveillance programme for bluetongue in Norway in 2016.

County	Number of dairy herds*	Number of dairy herds tested
Østfold	138	55
Akershus	123	87
Oslo	2	1
Hedmark	531	15
Oppland	1 099	10
Buskerud	186	20
Vestfold	66	17
Telemark	89	50
Aust-Agder	93	31
Vest-Agder	245	123
Rogaland	1 239	97
Hordaland	536	20
Total	4 347	526

\* Based on data from the Register of production subsidies as of 31 July 2016.

The samples were tested with an Indirect ELISA (ID Screen® Blue Tongue Milk) for detection of antibodies against BTV. Samples with inconclusive or seropositive ELISA results were retested in duplicate with the same ELISA. In case of positive bulk milk test, blood samples from all lactating dairy cows in the herd would be examined for antibodies with the ID Screen® Bluetongue Competition ELISA. In case of seropositive animals, all animals in the herd would be examined for BTV with real time RT-PCR (5).

The samples were analysed at the Norwegian Veterinary Institute in Sandnes and the Section for Immunology in Oslo.

## Results and discussion

Of 540 bulk milk samples collected from 526 farms in 2016, none tested positive for BTV. The agent has not been detected in Norway since 2009 (6) thus the cattle population has no antibodies against BTV.

Cattle are efficient sentinel animals for bluetongue. Beef cattle are not included in the programme because both dairy and beef cattle are kept in the same geographical areas. Most dairy cattle have to be kept outdoors, at least eight weeks during the summer, making their exposure to midges not very different from the exposure of beef cattle to the vector.

The most likely method of bluetongue introduction to Norway is either by import of infected animals or by airborne transfer of infected *Culicoides* (7). Imports of ruminants from EU countries not free from bluetongue, and all imports from countries outside EU are tested for the disease. The topography in Norway with hills and valleys makes it difficult for long distance transfer of *Culicoides* from one local area to another and there are relatively few ruminants per area compared to the rest of Europe, which makes it less likely for a widespread of the agent if BTV should be introduced.

The most important purpose of the surveillance programme is to reveal potential infections brought in with airborne midges during the vector season. The most probable entry of windborne infected midges is in the southern part of Norway from the beginning of May until the end of October. Infected midges may come from Sweden, Denmark or Scotland. Testing of bulk milk collected from the end of October and onwards will detect any infection introduced during the vector season.

## References

1. Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Chapter 2.1.3 Bluetongue and epizootic haemorrhagic disease. Paris: Office International des Epizooties (OIE); Web version adopted May 2009 ([http://www.oie.int/fileadmin/Home/eng/Health\\_standards/tahm/2.01.03\\_BLUETONGUE.pdf](http://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/2.01.03_BLUETONGUE.pdf)).
2. Hamnes IS, Hopp P, Høgåsen HR, Jor E, Mørk T, Sviland S, Tollersrud T. Blåtunge i Norge – status og risikovurdering per 5. mai 2009. Veterinærinstituttets rapportserie 06-2009. Oslo: Veterinærinstituttet; 2009.
3. Sviland S, Åkerstedt J, Håland KS, Klevar S, Mørk T. Overvåkingsprogrammet for blåtunge 2009 - En vurdering. Veterinærinstituttets rapportserie 02-2010. Oslo: Veterinærinstituttet; 2010.
4. Sviland S, Kjeang T. Bluetongue serotype 8 outbreak in Norway. Surveillance and monitoring of ruminants and vectors in the years 2007 to 2010. Norwegian Veterinary Institute`s Report series 6-2011. Oslo: Norwegian Veterinary Institute; 2011.
5. Shaw AE, et al. Development and initial evaluation of a real-time RT-PCR assay to detect bluetongue virus genome segment 1. J Virol Methods. 2007; 145(2):115-26.
6. Åkerstedt J, Sviland S, Klevar S, Tarpai A. The surveillance programme for bluetongue in Norway 2015. Surveillance programmes for terrestrial and aquatic animals in Norway. Annual report 2016. Oslo: Norwegian Veterinary Institute 2016.
7. Burgin I, Murkin P, Gloster J. 2009. Meteorological analysis of the introduction of Bluetongue to Norway in summer/autumn 2008: Second report 11 May 2009.

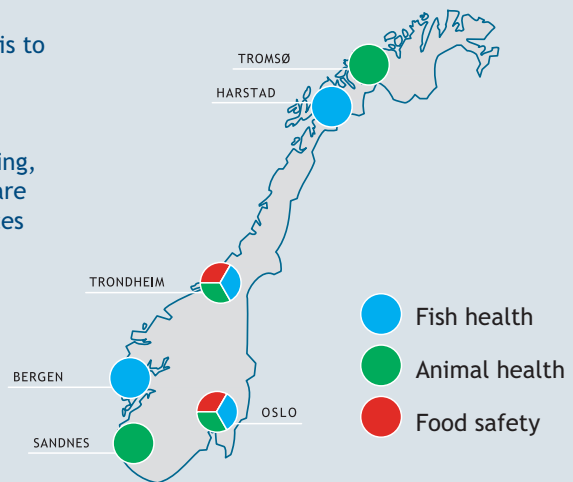
*Scientifically ambitious, forward-looking and cooperatively oriented  
– for integrated health*

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](http://www.vetinst.no)



**Veterinærinstituttet**  
Norwegian Veterinary Institute