



The Surveillance programme for *bovine viral diarrhoea* (BVD) in Norway 2025

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Summary

All bulk milk and blood samples tested in 2025 were negative for antibodies against bovine viral diarrhoea (BVDV).

Introduction

Bovine viral diarrhoea (BVD) is caused by the bovine viral diarrhoea virus (BVDV), a member of the genus *Pestivirus*. The virus is the causative agent of both mucosal disease and haemorrhagic syndrome. The most economically significant impact of BVD arises from infection in pregnant animals, which may result in embryonic death, abortion, and congenital malformations. Persistently infected calves may be born and constitute the primary reservoir for transmission of the virus to other animals (1). In Norway, BVD is classified as a List 2 disease and is also listed by the World Organisation for Animal Health (WOAH). Within the European Union (EU), BVD is a categorised under disease categories C, D, and E.

An eradication programme for BVD, jointly financed by the authorities and the livestock industry, was initiated in December 1992 (2). During the programme period, the number of herds under restrictions decreased from 2,950 in 1994 to zero by the end of 2006. Detailed descriptions of the programme, as well as factors contributing to its successful outcome, are provided in the annual report for 2006 (3). Since 2007, the programme has focused on surveillance and control (4). Norway has not applied for official free status for BVD from the ESA/EU.

The Norwegian Food Safety Authority (NFSA) is responsible for implementing the surveillance programme for BVD. The Norwegian Veterinary Institute is responsible for planning the programme, collecting the bulk milk samples from the dairies, performing the analyses, and reporting the results. Blood samples from beef herds are collected at slaughterhouses by NFSA inspectors.

Aim

The aim of the surveillance programme for BVD in 2025 was to document freedom from the infection in Norwegian livestock and to contribute to the maintenance of this favourable situation.

Materials and methods

Herds and sampling

The surveillance programme included both dairy and beef herds. The target population for dairy herds comprised all Norwegian cattle herds delivering milk to dairies during the sampling period. The target population for beef herds comprised all Norwegian beef herds delivering animals for slaughter in 2025.

A total of 25.5% of dairy herds were randomly selected for sampling. For beef herds, individual blood samples were collected from animals older than 24 months at 17 slaughterhouses, with a maximum of five animals per herd per sampling day. However, five herds were sampled with between six and ten samples on a single day.

In total, 1,320 bulk milk samples from 1,201 dairy herds were submitted by the dairies. Additionally, 4,228 individual blood samples were collected from 1,363 beef herds. The blood samples were analysed in pools comprising one to five animals, resulting in 1,712 pooled samples. Overall, the sampled herds represented approximately 21.7% of all Norwegian cattle herds (Table 1).

Table 1. Numbers of dairy herds and beef herds sampled in the Norwegian surveillance programme for BVD in 2025.

| Herd category | Cattle herds (total no. ¹) | Sampled herds (no. ²) | Sampled herds (%) |
|--------------------------|--|-----------------------------------|-------------------|
| Dairy herds ³ | 6 095 | 1 201 | 19.7 |
| Beef herds ⁴ | 5 731 | 1 363 | 23.8 |
| Total | 11 826 | 2 564 | 21.7 |

¹Based on data from the Register of production subsidies as of 1 March 2025.

²Combined beef and dairy farms could be sampled under both herd categories. The number of unique farms is given in the total number of sampled herds.

³Cattle herds delivering milk to dairies.

⁴Sampling performed at slaughterhouses.

Laboratory analyses

Bulk milk samples and blood samples (pooled or individual samples) were analysed for antibodies against BVDV using a commercially available indirect enzyme-linked immunosorbent assay (ELISA), SVANOVIR® BVDV- Ab Confirmation (Indical Bioscience GmbH, Leipzig, Germany), in accordance with the manufacturer's instructions (5). In the event of positive or inconclusive results in pooled blood samples, the individual samples comprising the pool were retested.

Bulk milk and individual blood samples yielding positive or inconclusive results were retested in duplicate using the SVANOVIR® BVDV- Ab Confirmation kit and/or, for blood samples, a competitive ELISA, ID Screen® BVDV p80 Antibody Competition (IDvet, Grabels, France), to exclude false-positive results (5).

Based on antibody levels in bulk milk, dairy herds would be categorized into four groups reflecting the estimated within-herd prevalence of seropositive cows (3, 6). Dairy herds with low to high antibody levels, or inconclusive serological results, would be subjected to follow-up investigations, including collection and analysis of new bulk milk samples or individual blood samples from youngstock. For beef herds, positive or inconclusive results would similarly be followed up by collection and testing of individual blood samples from youngstock in the herd of origin.

Animals with positive or inconclusive serological results would subsequently be tested for the presence of BVDV antigens using an antigen-capture ELISA (IDEXX Laboratories, Inc., Westbrook, Maine, USA). Positive findings would be confirmed by polymerase chain reaction (PCR) and sequence analysis.

Results

Of the 1,320 bulk milk samples from 1201 dairy herds, 1,319 tested negative, while one sample (0,1 %) tested positive following retesting in accordance with the procedure described in Methods section. This finding was followed up by collection and analysis of a new bulk milk sample from the herd, which yielded a negative result.

Of the 1,712 pooled blood samples from beef herds, 1,710 were seronegative, while two pools (0.1%) tested positive. Upon retesting, in accordance with the protocol described in the Methods section, all samples yielded negative results.

In conclusion, all 1,201 dairy herds and 1,363 beef herds included in the surveillance program for BVD were negative for antibodies against BVDV in 2025. Table 2 shows the results of the surveillance programme from 1993 to 2025.

Table 2. Numbers of herds and individual cattle tested for antibodies against BVDV, and numbers of herds and individual cattle positive for BVDV (antibody results not shown)

| Year | Bulk milk samples | Pooled blood samples from beef cattle >24 months ¹ | Pooled milk samples from primiparous cows | Pooled blood samples from young stock ² | Individual blood samples ² | | No. of virus positive | |
|------|-------------------|---|---|--|---------------------------------------|---------|-----------------------|--------------------|
| | No. of herds | No. of herds | No. of herds | No. of herds | No. of herds | Samples | Herds | Ind. blood samples |
| 1993 | 26 424 | - | 5 031 | 5 000 | NA | 46 000 | NA | 1 300 ³ |
| 1994 | 26 148 | - | 3 228 | 4 107 | NA | | NA | |
| 1995 | 25 577 | - | 3 191 | 5 347 | NA | 36 065 | NA | 1 180 |
| 1996 | 25 167 | - | 1 849 | 3 163 | NA | 21 437 | NA | 685 |
| 1997 | 24 862 | - | 1 297 | 3 292 | 1 515 | 16 023 | 265 | 525 |
| 1998 | 24 038 | - | 1 415 | 3 407 | 780 | 7 091 | 98 | 198 |
| 1999 | 23 584 | - | 924 | 3 060 | 648 | 7 619 | 92 | 224 |
| 2000 | 21 796 | - | 100 | 1 610 | 423 | 6 947 | 72 | 129 |
| 2001 | 19 910 | - | 53 | 4 198 | 386 | 6 287 | 56 | 174 |
| 2002 | 18 771 | - | - | 2 854 | 284 | 3 962 | 28 | 43 |
| 2003 | 17 549 | - | - | 2 100 | 149 | 1 135 | 9 | 22 |
| 2004 | 7 365 | - | - | 1 351 | 84 | 1 017 | 2 | 6 |
| 2005 | 7 481 | - | - | 1 230 | 48 | 356 | 1 | 4 |
| 2006 | 14 620 | - | - | 997 | 28 | 113 | 0 | 0 |
| 2007 | 1 575 | - | - | 387 | 8 | 20 | 0 | 0 |
| 2008 | 1 424 | - | - | 423 | 8 | 34 | 0 | 0 |
| 2009 | 1 315 | 435 | - | 10 | 7 | 31 | 0 | 0 |
| 2010 | 1 328 | 507 | - | 47 | 11 | 63 | 0 | 0 |
| 2011 | 1 226 | 1 278 | - | 0 | 5 | 44 | 0 | 0 |
| 2012 | 1 190 | 1 179 | - | 0 | 4 | 19 | 0 | 0 |
| 2013 | 1 042 | 1 167 | - | 0 | 2 | 10 | 0 | 0 |
| 2014 | 1 489 | 937 | - | 11 | 4 | 20 | 0 | 0 |
| 2015 | 1 178 | 1 206 | - | 0 | 6 | 32 | 0 | 0 |
| 2016 | 1 181 | 1 334 | - | 0 | 1 | 5 | 0 | 0 |
| 2017 | 1 107 | 1 448 | - | 0 | 2 | 20 | 0 | 0 |
| 2018 | 1 131 | 1 341 | - | 0 | 0 | 0 | 0 | 0 |
| 2019 | 1 071 | 1 328 | - | 0 | 0 | 0 | 0 | 0 |
| 2020 | 1 169 | 1 258 | - | 0 | 2 | 10 | 0 | 0 |
| 2021 | 1 212 | 1 413 | - | 0 | 0 | 0 | 0 | 0 |
| 2022 | 1 093 | 1 432 | - | 0 | 0 | 0 | 0 | 0 |
| 2023 | 1 336 | 1 393 | - | 0 | 0 | 0 | 0 | 0 |
| 2024 | 1 524 | 1 372 | - | 0 | 0 | 0 | 0 | 0 |
| 2025 | 1 201 | 1 363 | - | 0 | 0 | 0 | 0 | 0 |

¹Sampling performed in the herds prior to 2011. A small number of blood samples collected at slaughterhouses could originate from dairy herds.

²Prior to 2009, this number included surveillance in beef cattle.

³Approximate numbers

NA=Data not available

Discussion

Bovine viral diarrhoea virus was not detected in any of the herds sampled in 2025.

In Norway, no infected herds have been identified, and no herds have been subject to restrictions due to BVD since 2005. In 2006, bulk milk from all dairy herds and blood samples from 20 % of the beef herds were analysed, with no evidence of recent infection detected. Since then, more than 10 % of all dairy and beef herds have been tested annually, and no infections have been identified.

Using scenario tree modelling, the probability of freedom from BVDV in Norway was estimated at 99.6 % by the end of 2011 (7). Results of the surveillance programme from 2012 to 2025 continue to support the conclusion that the Norwegian cattle population remains free from BVD.

Although Norwegian cattle population is currently free from the disease, the importation of infected animals or bovine-derived products continues to pose a risk to this status. To ensure rapid detection of any potential reintroduction and effective control of further spread, the surveillance system must rely on a high level of competence and awareness among farmers and local veterinarians.

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