

Monitoring

ANIMAL HEALTH



Blue tongue serotype-3 in cattle: clinical signs, pathology, and current status

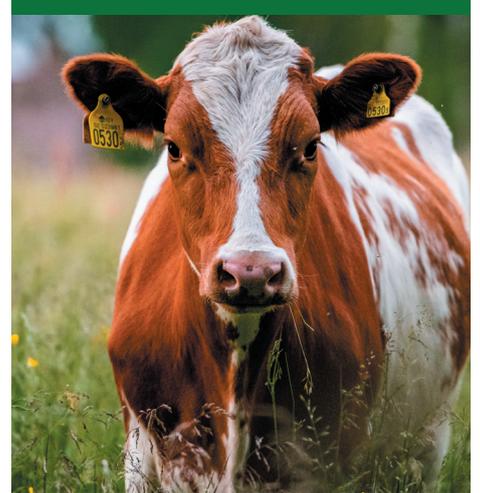
On Tuesday, September 5, 2023, blue tongue (BT) was detected in the Netherlands. A few days later, Wageningen Bioveterinary Research (WBVR) announced that, based on whole genome sequencing, serotype 3 (BTV-3; genus *Orbivirus*, family *Reoviridae*) was identified. This finding was later confirmed by the European reference laboratory in Spain.

Blue tongue is a viral disease in ruminants transmitted by various *Culicoides* species. As BTV-3 spreads across the Netherlands, and cases have been confirmed in Germany, Belgium, and the United Kingdom, the clinical signs of the BTV-3 outbreak in cattle are becoming increasingly clear. The impact of this BTV-3 outbreak in cattle is currently being further investigated by GD.

Clinical signs observed in cattle include fever, (significant) decrease in milk production, lesions of the oral and nasal mucous membranes and muzzle, lesions of the udder skin, nasal discharge, conjunctivitis, and salivation. Additionally, multiple cases of lameness and stiffness are observed, with red and swollen coronary bands and swollen legs. Regurgitation and problems swallowing, tympanic rumen and degloving of the claw horn are also reported symptoms. The progression and duration of the disease, the number of affected cattle per farm, and the severity of symptoms in cattle vary widely. Particularly, cows around calving can become severely ill.

Histopathological examination of affected skin and mucous membranes of the nose and mouth revealed superficial tissue degeneration, subepithelial microbleeds, oedema, damage to the walls of small blood vessels, microvascular thrombosis, and sometimes mild inflammation around blood vessels. Acute muscle degeneration was demonstrated in the oesophagus, rumen pillars, and/or heart muscle of several animals. The muscle degeneration identified in the oesophagus of multiple animals may explain the clinical observations of fluid regurgitation and problems swallowing. Due to severe symptoms, such as severe lameness or severe pulmonary oedema, animals may die or be euthanised in cases of hopeless suffering. The clinical symptoms in cattle appear to be more severe than during the BTV-8 outbreak in 2006-2008.

BTV-3 has also been detected in the spleen of stillborn calves submitted for pathological examination. This finding indicates that, like BTV-8, BTV-3 can be vertically transmitted in cattle. This emphasizes the importance to closely monitor for signs of congenital abnormalities that may arise from an infection with BTV-3 during gestation. In 2007, we observed that unborn calves could develop brain abnormalities following an BTV-8 infection of the mother during early gestation. Whether an infection with BTV-3 can also lead to the development of congenital brain abnormalities in calves is unknown, but is expected to become evident in the coming months. The Veekijker welcomes any signals about possible congenital abnormalities. With your help, we aim to get a complete picture of the consequences and impact of the BTV-3 outbreak in the Netherlands. When submitting animals for pathological examination, please clearly indicate the abnormalities observed (for example: star gazing, "dumb" calf) so that the pathologist can conduct a more targeted research into the underlying cause during the autopsy.



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Furthermore, vigilance is needed for the occurrence of disease caused by other serotypes of BTV and Epizootic Haemorrhagic Disease Virus (EHDV). EHDV can cause similar symptoms in cattle as BTV, and is circulating in Italy, Spain, Portugal, and France. Because much is still unknown about BTV-3, it is essential that new symptoms are quickly reported, investigated, and shared.

Update on bacterial resistance in materials from animals in non-dairy farms

The increase in the percentage of *Mannheimia haemolytica* isolates resistant to chlortetracycline/doxycycline/oxytetracycline observed in the first and second quarters of 2023 does not continue to rise in the third quarter, but remains at a high level of 86 percent. The level of resistance increased during the recent quarters from 58 percent, to 77 percent to 93 percent in fourth quarter 2022, first quarter 2023, and second quarter 2023, respectively.

Since 2016, the percentage of *M. haemolytica* isolates resistant to chlortetracycline/doxycycline/oxytetracycline has been showing an upward trend. A similar increase in the resistance of isolates of *Pasteurella multocida* was previously observed, but does not seem to increase further since the fourth quarter of 2021. Similar to *M. haemolytica*, the percentage of resistant *P. multocida* isolates is closely monitored.

Tetracyclines are mentioned as first-choice antibiotics for treating broncho(pleuro) pneumonia caused by *M. haemolytica* and *P. multocida* in the Formulary for Veal Calves and Beef Cattle of the Royal Dutch Veterinary Association (KNMvD).

Cows experiencing anaemia and/or bloody diarrhoea after the administration of a feed additive

In July 2023, the Veekijker received reports of severely ill cows experiencing anaemia, bloody diarrhoea, decubitus, and death after the administration of a feed additive aimed at rapidly drying off the cows. GD reported the suspicion of an unsafe animal feed to the Dutch Food and Consumer Product Safety Authority (NVWA), and informed the manufacturer of the product about the cases. Additionally, the Veekijker maintained contact with the involved farmers and veterinarians to monitor the cases and collect data. Ultimately, the Veekijker identified eleven different farms where animals showed similar symptoms, with one case showing no clear link to the feed additive.

Seven animals, all adult dairy cows, were sent to GD for post-mortem examination. The animals exhibited signs of acute haemolytic anaemia, jaundice, bloody diarrhoea, and a

brown-coloured carcass, kidneys, and/or urine. Some carcasses had a pungent odour of 'onion smell' in the rumen. The feed additive, intended for the abrupt drying off of cows, contained among other things, onion and garlic extracts. Onions are known to be able to cause haemolytic anaemia, with toxicity attributed to disulfides. Following these cases, the producer has halted the sales of this product in the Netherlands. Despite feed additives not being registered in the same way as veterinary drugs, their ingredients can contain highly potent (pharmacological) active substances, and toxicological risks may sometimes be insufficiently understood.

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Animal health of cattle in the Netherlands, third quarter of 2023

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Category (AHR)	Surveillance – Highlights Third Quarter 2023
Execution decree (EU) 2018/1882 of Animal Health Regulation (AHR) 2016/429 (Category A disease)			
Lumpy Skin Disease (LSD)	Viral infection. The Netherlands is officially disease-free.	A, D, E	Infections have never been detected.
Foot and Mouth Disease (FMD)	Viral infection. The Netherlands has been officially disease-free since 2001.	A, D, E	No infections detected.
Execution decree (EU) 2018/1882 of Animal Health Regulation (AHR) 2016/429 (Categories B through E)			
Bluetongue (BT)	Bluetongue serotype 3 outbreak since September 6, 2023. Other European countries are also experiencing outbreaks.	C, D, E	Bluetongue serotype 3 outbreak confirmed in sheep and cattle in the Netherlands.
Bovine genital campylobacteriosis	Bacterium. The Netherlands has been disease-free since 2009. Monitoring of AI and embryo stations, and in animals for export.	D, E	<i>Campylobacter fetus</i> spp. <i>Veneralis</i> not detected.
Bovine Viral Diarrhoea (BVD)	Viral infection. Control measures compulsory for dairy farms, voluntary for beef cattle farms.	C, D, E	90 percent of dairy farms have BVD-free or BVD-unsuspected status.* 18,9 percent of all non-dairy farms had a favourable status (free or unsuspected). *BVD status determined according to the GD programme
Brucellosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterium. The Netherlands has been officially diseasefree since 1999. Monitoring via antibody testing of blood samples from aborting cows.	B, D, E	No infections detected.
Enzootic bovine leucosis	Viral infection. The Netherlands has been officially diseasefree since 1999. Monitoring via antibody investigation in bulk milk and blood samples of slaughtered cows.	C, D, E	No infections detected.
Epizootic Haemorrhagic Disease (EHD)	Viral infection. In cattle in continental Europe since 2022 (Spain and Italy).	D, E	No suspicious clinical cases.
Infectious Bovine Rhinotracheitis (IBR)	Viral infection. Control measures compulsory for dairy farms, voluntary for beef cattle farms.	C, D, E	81 percent of dairy farms had IBR-virus free or IBR-bulk milk antibody unsuspected status. 20 percent of all non-dairy farms had a favourable status (free or unsuspected).
Anthrax (zoonosis, infection via animal contact)	Bacterium. Not detected in the Netherlands since 1994. Monitoring via blood smears from fallen stock.	D, E	No infections detected.
Paratuberculosis	Bacterium. Control programme compulsory for Dutch dairy farms. 99 percent of dairy farms participate.	E	83 percent of dairy farms have Paratuberculosis Programme Netherlands (PPN) status A (unsuspected).
Rabies (zoonosis, infection via bite or scratch)	Viral infection. The Netherlands has been officially diseasefree since 2012 (illegally imported dog).	B, D, E	No infections detected.

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Category (AHR)	Surveillance – Highlights Third Quarter 2023
Execution decree (EU) 2018/1882 of Animal Health Regulation (AHR) 2016/429 (Categories B through E)			
Bovine Tuberculosis (TBC) (zoonosis, infection via animal contact or inadequately prepared food)	Bacterium. The Netherlands has been officially disease-free since 1999. Monitoring via slaughtered cattle.	B, D, E	No infections detected.
Trichomonas	Bacterium. The Netherlands has been disease-free since 2009. Monitoring of AI and embryo stations, and in animals for export.	C, D, E	<i>Tritrichomonas foetus</i> not detected.
Q fever (zoonosis, infection via dust or inadequately prepared food)	Bacterium. In the Netherlands, a different strain in cattle to that found on goat farms, with no established relationship to human illness. Once again a standard component of the aborter pathology protocol since the first quarter of 2023.	E	One infection detected in aborted foetus.
Article 3a.1 Reporting of zoonoses and symptoms of illness 'Rules for Animal Husbandry' of the Dutch Animal Act			
Leptospirosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterium. Control measures compulsory for dairy farms, voluntary for beef cattle farms.	-	98,1 percent of dairy farms had leptospirosis-free status. 29,9 percent of non-dairy farms had leptospirosis-free status. Animals still being purchased with a status lower than leptospirosis-free, though less than in the previous quarter. Four dairy farms with a leptospirosis infection.
Listeriosis (zoonosis, infection via inadequately prepared food)	Bacterium. Occasional infection detected in cattle.	-	Infections detected in two cattle submitted for necropsy.
Salmonellosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterium. Control measures compulsory for dairy farms, voluntary for beef cattle farms.	-	97,4 percent of dairy farms had favourable bulk milk results (national programme).
Yersiniosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterium. Detected occasionally in cattle, mostly in aborted fetuses.	-	No infections detected.
(EEC) Decree no. 999/2001			
Bovine Spongiform Encephalopathy (BSE)	Prion infection. The Netherlands has OIE status 'negligible risk'. No cases detected upon monitoring since 2010 (total 88 cases between 1997-2009).	-	No infections detected.

Table continuation

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Category (AHR)	Surveillance – Highlights Third Quarter 2023
Other infectious diseases in cattle			
Malignant Catarrhal Fever (MCF)	Viral infection. Infections with Ovine herpes virus type 2 occur occasionally in the Netherlands.	-	Seven infections detected at necropsy.
Liver fluke	Parasite. Liver fluke is present in the Netherlands, particularly in wetland areas.	-	Infections detected at two farms and one in cattle submitted for necropsy.
Neosporosis	Parasite. An important infectious cause of abortion in the Netherlands.	-	Infections detected in four aborted foetuses.
Tick borne diseases	Ticks infected with <i>Babesia divergens</i> , <i>Anaplasma phagocytophilia</i> and <i>Mycoplasma wenyonii</i> are present in the Netherlands.	-	No infections with <i>Anaplasma phagocytophilum</i> detected.



Animal health monitoring

Since 2002, Royal GD has been responsible for animal health monitoring in the Netherlands, in close collaboration with the veterinary sectors, the business community, the Ministry of Agriculture, Nature and Food Quality, vets and farmers. The information used for the surveillance programme is gathered in various ways, whereby the initiative comes in part from vets and farmers, and partly from Royal GD. This information is fully interpreted to achieve the objectives of the surveillance programme – the rapid identification of health problems on the one hand and the following of more general trends and developments on the other. Together, we team up for animal health, in the interests of animals, their owners and society at large.