

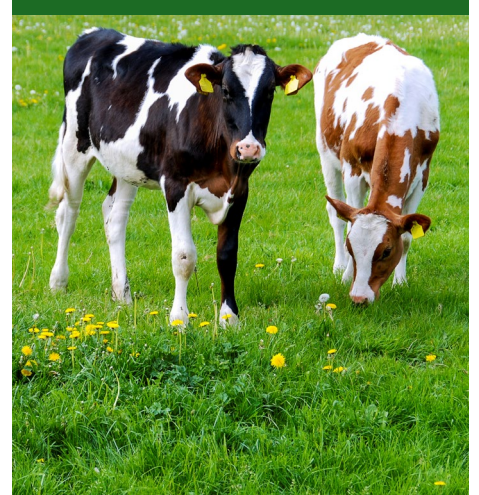
Monitoring

ANIMAL HEALTH



Epizootic Haemorrhagic Disease - European infection started in North Africa

Cattle in both Italy and Spain have been shown to have the EHDV-8 serotype. An investigation by the Italian authorities shows the virus, found in the outbreaks on Sardinia and Sicily in October and November 2022, to have come from North Africa. The genome is identical (>99.9 percent nucleotide sequence identity) to EHDV-8 strains detected in Tunisia in 2021. This confirms the suspicion that EHD has been transmitted by vectors via the air, from northern Africa to the southern European regions. No new infections have been reported in Spain in the first quarter of 2023. In Italy, ten new outbreaks were detected among cattle.



IBR outbreak halted in the Northern Netherlands

In late December 2022 and early 2023, eight dairy farms in a small area of the Northern Netherlands lost their IBR-free status in quick succession due to an IBR infection. Nasal swabs were taken at three of these farms. GD analysis of the nasal swabs using Whole Genome Sequencing showed that the farms were all dealing with the same strain. This strain was clearly different from other virus strains, which had been collected at other locations in the Netherlands around the same time. This confirms the suspicion that there was a common source at the farms in question in the Northern Netherlands. No new infections were found in bulk milk monitoring at IBR-free farms in the area in the Northern Netherlands in the months of February and March. The outbreak in this area would therefore seem to have been halted, partly due to rapid deployment of vaccination and extra attention for hygiene protocols. In case of the slightest doubt regarding clinical symptoms, we recommend that nasal swabs are submitted to GD, for quick detection and therefore reduced risk of virus spread.

Introduction of infectious diseases through purchase

The purchase of cattle is an important risk factor for the introduction of infectious diseases. A number of the GD certification programmes automatically prompt tests upon purchase for farms who buy cattle from farms without free status or from foreign farms. In practice however, the purchased cattle are often shown to have already had contact with the farm herd for some time, before the test results are known. This increases the risk of infections spreading. In 2020, GD researched how often imported cattle were tested for leptospirosis, salmonella, paratuberculosis, IBR and BVD after purchase, and how often this resulted in unfavourable test results. This research was recently repeated for cattle purchased from Dutch sources.

A calculation was made of the number of cattle (older than 2 months) purchased from other Dutch farms in the period from 2017 through 2022 (sale within the Netherlands), and how

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many of them were proven to have infections. The results show that the risk of purchasing an infected animal varies from 0.13 percent per purchased animal for leptospirosis, 0.25 percent for BVD (virus, 0.87 percent for paratuberculosis, 3.3 percent for IBR, 5.6 percent for salmonella and to 24 percent for BVD (antibodies). However, the significance and impact of unfavourable test results vary per disease. BVD antibodies are only relevant for example, because there is a risk that a cow with antibodies is carrying a persistently infected (PI) calf, while a cow with antibodies for IBR may be or may become infectious due to lifelong carrier status following infection with the virus. In terms of leptospirosis, paratuberculosis and

BVD (virus), there is only a low risk of detected infection per purchased animal. However, a high volume of purchased cattle can result in a realistic risk of introduction at a substantial number of cattle farms.

The risk of a detected IBR or BVD infection in domestic purchases is higher than in imported cattle. This is explained by the majority of the import cattle coming from countries with a favourable status for these infectious diseases (Germany and Belgium). For salmonella and paratuberculosis, there is very little difference in the risk of detecting disease between domestic purchases and import. For leptospirosis, the risk of a detected infection is actually higher in

imported cattle, as the Netherlands is the only European country where leptospirosis is actively controlled.

The purchase of infected cattle can have serious consequences. We recommend encouraging cattle farmers to check the public register of health statuses before purchasing cattle, in order to be aware of the current health status of the farm of origin, and include this in the purchasing decision. This is part of the so-called Risk Check, in which pre-screening of cattle to be purchased takes place beforehand at the farm of origin

Salmonella type C

In the first quarter of 2023, *Salmonella* serogroup C was detected in manure and necropsy material from both dairy and veal farms. The number of isolates and the number of *Salmonella* serogroup C-infected farms is higher this quarter versus the previous quarter and even higher than the first quarter of 2022. Infections with *Salmonella* serogroup C cannot be detected by means of the GD ELISA test for antibodies in blood, nor by the national bulk milk testing system, but rather only via bacteriological testing of necropsy material or manure samples.

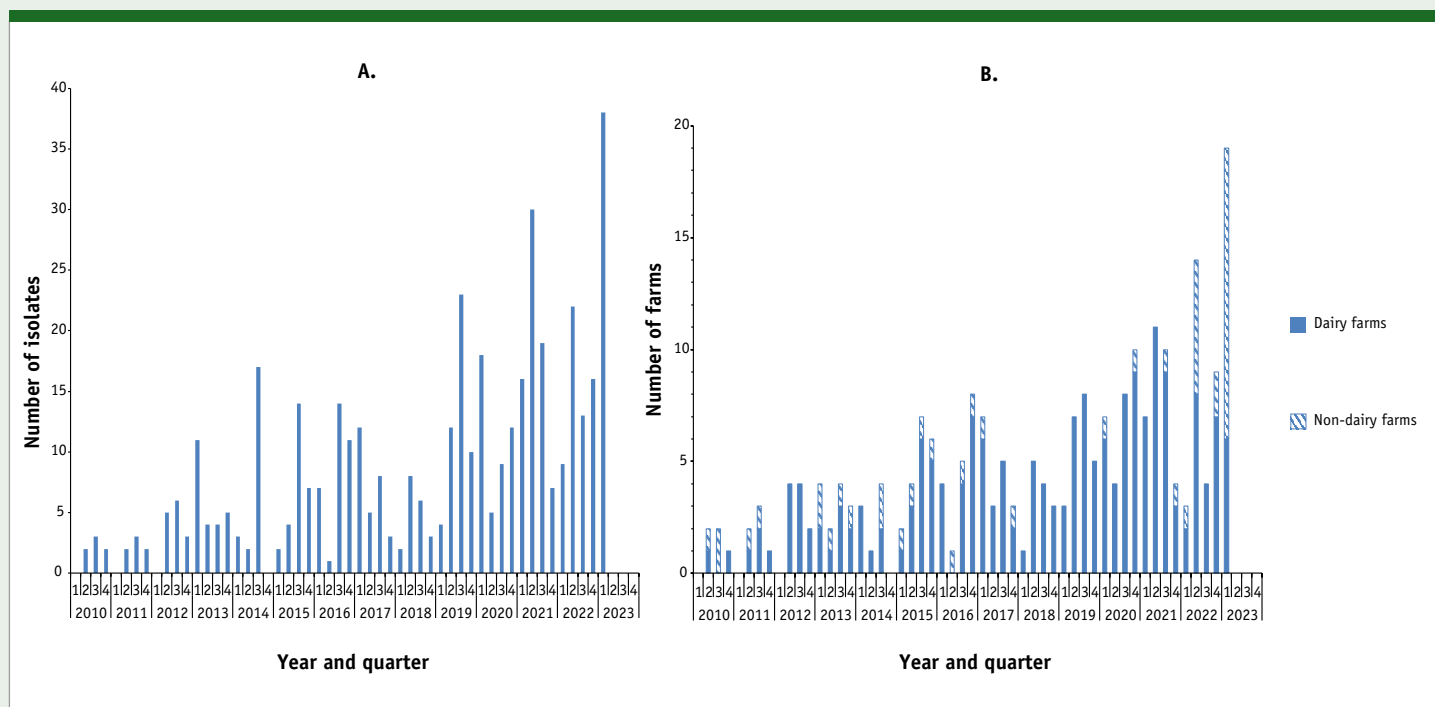


Figure 1 *Salmonella* serogroup C: (A) number of serogroup C isolates per quarter, (B) number of dairy and non-dairy commercial cattle farms at which serogroup C was isolated.

Tick-borne encephalitis (TBE) Germany

Tick-borne encephalitis (TBE) is a viral infection and a zoonosis. Ruminants become infected when bitten by an infected tick. Cattle do not generally display clinical symptoms, but may transmit the virus in milk during the viremia, which lasts one week. Humans can also become infected by consuming unpasteurised milk or (soft) cheeses made from unpasteurised milk. Certain regions of Germany have an increased risk of tick-borne encephalitis in humans due to infection with the TBE virus. Three new risk areas were recently added, which all border on previously known risk areas (see Figure 2A). A total of 546 human TBE patients were reported in Germany in 2022. This signifies a 30 percent increase in the number of reports versus 2021 (421 reported cases). The majority (98 percent) of the TBE patients in 2022 were not/insufficiently vaccinated against TBE. In Germany, TBE vaccination is recommended for all persons exposed to ticks in TBE-risk areas and to persons whose work causes them to be at risk of infection with TBE.

The TBE virus is transmitted by ticks (in Western Europe particularly by *Ixodes ricinus*). In Germany, ticks became active four weeks earlier in 2023 versus 2022. In humans, TBE is characterised by a typical bi-phase process. The main clinical signs of the first phase are fever, fatigue, malaise, headache and generalised pain. During the

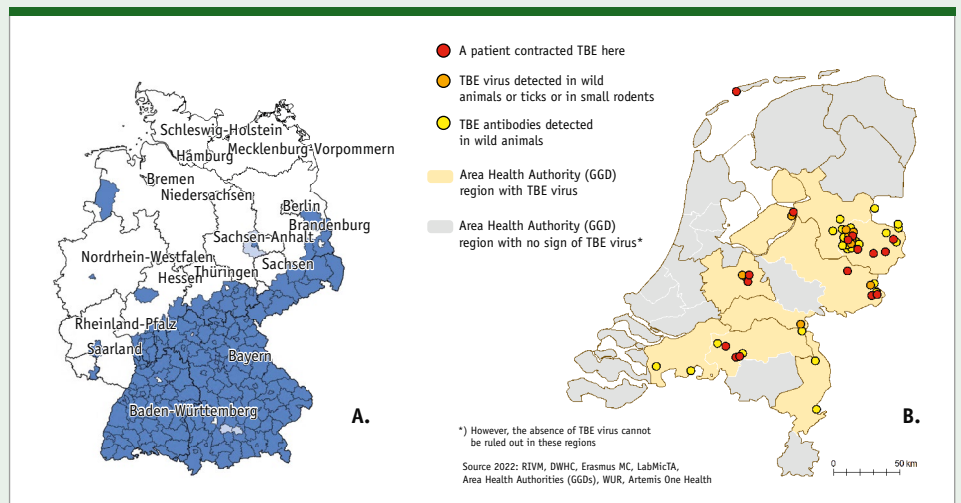


Figure 2 (A) TBE risk areas in Germany. The dark blue areas are the previously known risk areas, the light blue areas are the new risk areas. The white areas are not known to be risk areas. Source: [Epidemiologisches Bulletin 9/2023 \(rki.de\)](https://www.rki.de) (B) Overview of the tick encephalitis virus in the Netherlands (source: RIVM, DWHC, WUR, Artemis and NorthTick, December 2022).

second phase, symptoms vary from mild meningitis to serious encephalitis. As of 2016, we know that ticks in certain areas of the Netherlands may be infected with the TBE virus. According to the Dutch National Institute for Public Health and the Environment (RIVM), there is little risk of infection following a tick bite in the Netherlands, as very few ticks are infected with the TBE virus. Figure 2B gives an overview of the tick encephalitis virus in the Netherlands.

Sources: [Promed, Epidemiologisches Bulletin 9/2023 \(rki.de\)](https://www.rki.de), [Tick encephalitis | LCI guidelines \(rivm.nl\)](https://www.rivm.nl), [Factsheet about tick-borne encephalitis \(TBE\) \(europa.eu\)](https://www.europa.eu), [Epidemiologisches Bulletin 4/2023 \(rki.de\)](https://www.rki.de), [National Coordination Centre for Travel Advice: Via-muggen-en-insecten \(via mosquitos and insects\) - \(lcr.nl\)](https://www.lcr.nl), [Tick encephalitis \(TBE\) | RIVM.](https://www.rivm.nl)

Trends and development of *Mannheimia haemolytica* according to pathological data

One of the components of animal health monitoring of cattle is the registration and reporting of the findings of pathological examination. The analysis of pathological data allows detection of trends and developments of certain infectious diseases, divided into farm types and age groups.

The percentage of animals submitted with diagnosis *Mannheimia haemolytica* in dairy cattle older than 1 year was higher than expected in the third and fourth quarters of 2022, namely 2.4 and 9.3 percent, respectively. The percentages were 0.9

percent and 2.6 percent, respectively, in the third and fourth quarters of 2021. The average percentage of animals submitted with diagnosis *M. haemolytica* was 7.3 percent over the five-year analysed period. This is therefore a declining trend over the five-year period (Figure 3A). The trend of fibrinous pneumonia was comparable with the trend of animals submitted with *M. haemolytica* in dairy cattle. *M. haemolytica* is a known cause of fibrinous pneumonia in dairy cattle.

The percentage of animals submitted with *M. haemolytica* in veal calves was 10.3 percent in

the third quarter of 2022 and 34.8 percent in the fourth quarter. These percentages were 17.2 and 19.7 percent, respectively, in these quarters of 2021. Over the five-year period, the average percentage of animals submitted with *M. haemolytica* was 23.3 percent, which once again signifies a declining trend (Figure 3B). *M. haemolytica* is the main cause of polyserositis in veal calves.

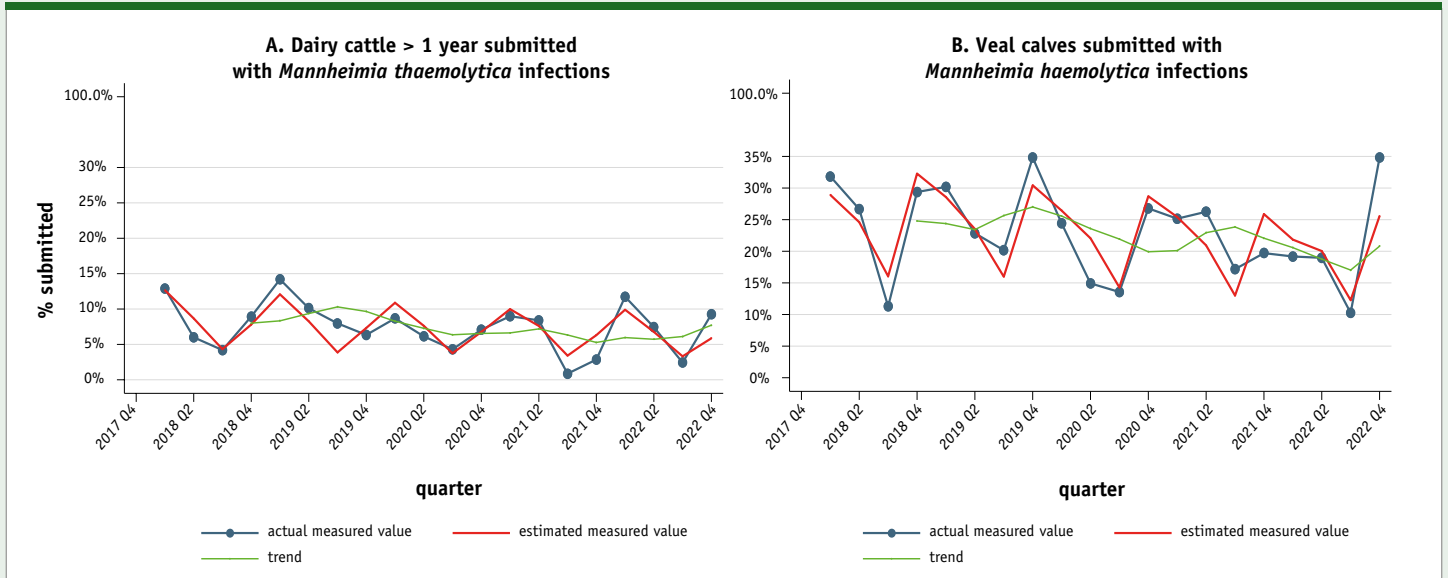


Figure 3 Percentage of animals submitted with diagnosis *Mannheimia haemolytica* (A) in dairy cattle older than 1 year and (B) in veal calves per quarter in the period from 1 January 2018 through 31 December 2022 (Source: Data analysis based on GD pathology data).

Animal health of cattle in the Netherlands in the first quarter of 2023

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Category (AHR)	Surveillance Highlights First 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)	Viral infection. The Netherlands has been officially disease-free since 2012 (all serotypes). Annual screening.	C, D, E	The Netherlands BTV-free.
Bovine genital campylobacteriosis	Bacterial infection. 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>venerealis</i> not detected.
Bovine Viral Diarrhoea (BVD)	Viral infection. Control measures compulsory for dairy farms, voluntary for beef cattle farms.	C, D, E	89 percent of dairy farms have BVD-free or BVD-unsuspected status.* This is 23 percent among voluntarily participating non-dairy farms. *BVD status determined via GD programme
Brucellosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. The Netherlands has been officially disease-free since 1999. Monitoring via antibody testing of blood samples from aborting cows.	B, D, E	No infections detected.

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Category (AHR)	Surveillance Highlights First Quarter 2023
Execution decree (EU) 2018/1882 of Animal Health Regulation (AHR) 2016/429 (Categories B through E)			
Enzootic bovine leucosis	Viral infection. The Netherlands has been officially disease-free since 1999. Monitoring via antibody testing of bulk milk and blood samples of slaughtered cattle.	C, D, E	No infections detected.
Epizootic Haemorrhagic Disease (EHD)	Viral infection. In continental Europe since 2022 (Spain and Italy).		Infections have never been detected.
Infectious Bovine Rhinotracheitis (IBR)	Viral infection. Control measures compulsory for dairy farms, voluntary for beef cattle farms.	C, D, E	80 percent of dairy farms had IBR-free or IBR-unsuspected status. This is 21 percent among voluntarily participating non-dairy farms.
Anthrax (zoonosis, infection via animal contact)	Bacterial infection. Not detected in the Netherlands since 1994. Monitoring via blood smears from fallen stock.	D, E	No infections detected.
Paratuberculosis	Bacterial infection. Control programme compulsory for Dutch dairy farms. 98 percent of dairy farms participate.	E	82 percent of dairy farms have Paratuberculosis Programme Netherlands (PPN) status A (unsuspected).
Rabies (zoonosis, infection via bites or scratch wounds)	Viral infection. The Netherlands has been officially disease-free since 2012 (illegally imported dog).	B, D, E	No infections detected.
Bovine tuberculosis (TBC) (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. The Netherlands has been officially disease-free since 1999. Monitoring via slaughtered cattle.	B, D, E	No infections detected.
Trichomonas	Bacterial infection. 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)	Bacterial infection. 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	No infection detected in submitted aborted fetuses.

Table continuation

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Category (AHR)	Surveillance Highlights First Quarter 2023
Article 3a.1 Reporting of zoonoses and clinical signs 'Rules for Animal Husbandry' of the Dutch Animal Act			
Leptospirosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. Control programme compulsory for dairy farms, voluntary for beef cattle farms.	-	97 percent of dairy farms have leptospirosis-free status. 31 percent of non-dairy farms have leptospirosis-free status. Animals still being purchased with a status lower than leptospirosis-free. Two dairy farms with a leptospirosis infection.
Listeriosis (zoonosis, infection via inadequately prepared food)	Bacterial infection. Occasional infection detected in cattle.	-	Infections detected in eight cattle submitted for necropsy and in one individual milk sample.
Salmonellosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. Control programme compulsory for dairy farms, voluntary for beef cattle farms.	-	97.5 percent of dairy farms have favourable bulk milk results (national programme).
Yersiniosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. Detected occasionally in cattle, mostly in aborted fetuses.	-	Four infections have been detected.
Regulation (EC) 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).	-	One infection detected. Atypical variant.
Other infectious diseases in cattle			
Malignant Catarrhal Fever (MCF)	Viral infection. Infections with Ovine herpes virus type 2 occur occasionally in the Netherlands.	-	Six infections detected at necropsy.
Liver fluke	Parasite. Liver fluke is present in the Netherlands, particularly in wetland areas.	-	Infections detected at sixteen farms and two in cattle submitted for necropsy.
Neosporosis	Parasite. An important infectious cause of abortion in the Netherlands.	-	Infections detected in two submitted aborted fetuses.
Tick borne diseases	External parasite that can transfer infections. Ticks infected with <i>Babesia divergens</i> , <i>Anaplasma phagocytophilia</i> and <i>Mycoplasma wenyonii</i> are present in the Netherlands.	-	No infections 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.