Monitoring ANIMAL HEALTH

Distribution of Salmonella isolates in various serogroups

Since 2016, the number of *Salmonella* enterica subsp. enterica isolates in necropsy material and faecal samples from both dairy farms and veal farms has been declining (Figure 1). In that same period, the percentage of dairy farms with antibodies to salmonella bacteria in the bulk milk also declined.

At dairy farms, there is always a higher proportion of serogroup D (including *S*. Dublin) at necropsy, versus faeces testing. It is suspected that *S*. Dublin infections have a relatively invasive progress and are more likely to result in mortality. The proportion of serogroup C has gradually increased at dairy farms over the past years, up to 21 percent of the serotyped isolates from faeces samples and 14 percent of the isolates from necropsy material in 2021.

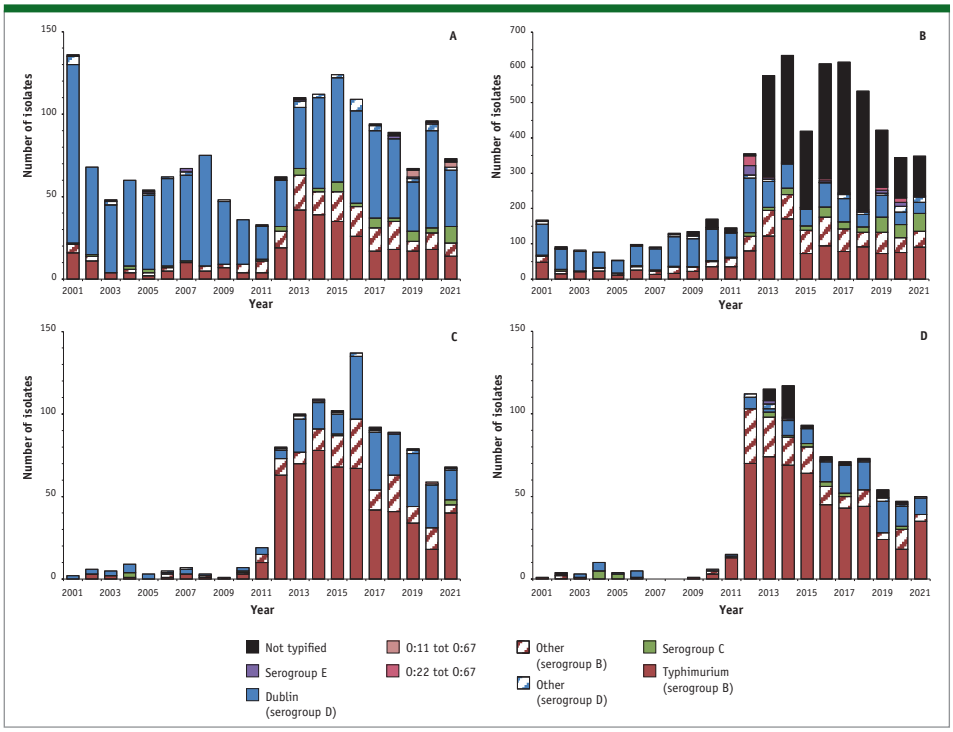


Figure 1 *Number of isolates per serogroup/serotype per year:, (A) samples from dairy farms, necropsy; (B) dairy farms, faeces; (C) veal farms, necropsy; (D) veal farms, faeces.*

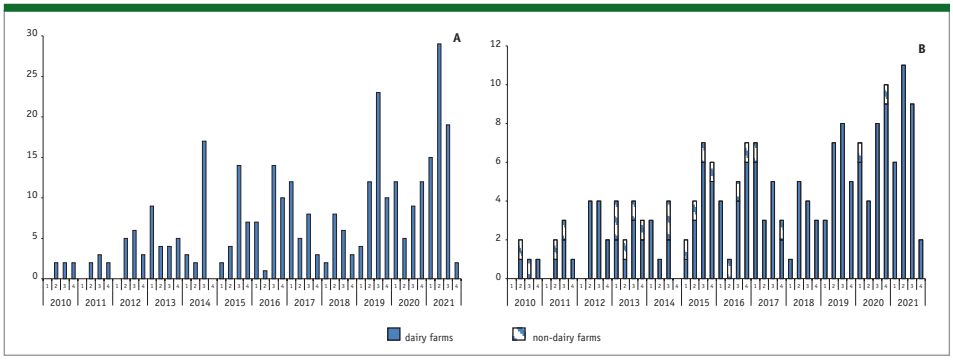
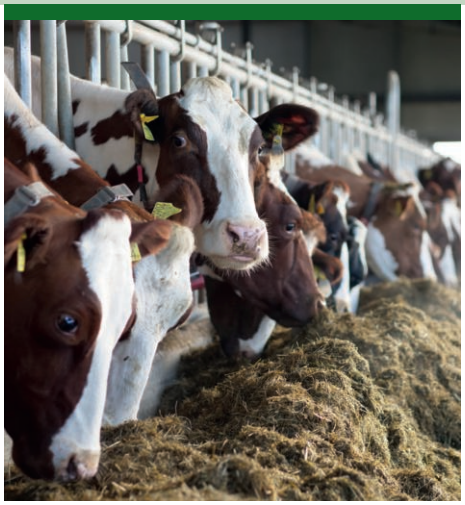


Figure 2. *Salmonella serogroup C: (A) number of serogroup C isolates per quarter, (B) number of dairy and non-dairy cattle farms at which serogroup C was isolated.*



The same increase is visible at a number of cattle farms where the infection has been detected (Figure 2). Serogroup C has only been detected at a limited number of cattle farms, per quarter. The variation in clinical signs for serogroup C reported to us by farmers and veterinarians seems comparable with the variation of clinical signs for the serotypes more frequently detected in the Netherlands.

However, we are unaware of how often serotype infections of serogroup C occur at Dutch cattle farms without further symptoms, as the current ELISA for blood testing, individual milk samples and bulk milk samples cannot detect antibodies for this serogroup. When there are signs in keeping with salmonellosis, ELISA therefore cannot exclude a salmonella infection with serogroup C. Besides at necropsy and in an individual faeces culture, an infection can also be detected using a pooled sample culture from the manure pit.

Hoof health

The data analysis of the animal health monitor for cattle does not routinely monitor indicators of hoof health. Hoof trimmers register hoof data for more than one thousand participants in DigiKlauw, a joint product introduced by CRV and GD. In 2016, DigiKlauw data for the years 2012 through 2015 was processed in an in-depth analysis. This analysis was repeated in 2021, for the 2016 through 2020 period. This has provided us with insight into long-term trends in hoof diseases.

The participating farms were shown to deviate from the average Dutch dairy farm in terms of farm characteristics such as size and the use of outdoor grazing. However, the trends for, for example farm size and outdoor grazing, were comparable with all Dutch farms, over the course of time. We expect the observed trends in hoof diseases to therefore be representative for Dutch dairy farms. Some 24 percent of the farms have all cattle hooves trimmed all at once, while an increasing share (40 to 50 percent) of the farms undertake strategic hoof care. These farms then trim the dry cows and the cows with hoof problems a number of times per year. In the latter care policy, the percentage of hoof diseases in all the cattle trimmed is an overestimation of the actual prevalence in the total cattle population.

Hoof health in the Netherlands has not essentially changed versus the previous analysis, five years ago. There has recently been a slight increase in non-infectious hoof diseases (NIKA; Figure 3A). The infectious hoof diseases (IKA; Figure 3B) have declined slightly since 2018. There has been a declining trend for several years specifically for foot rot (an infectious hoof disease) and sole haemorrhaging (a non-infectious hoof disease), both in the current and previous analysis periods.

The sector is taking various measures aimed at improving dairy cattle hoof health. In 2021, GD initiated the first phase of a project for an approach to hoof health in the Netherlands. This project draws up an inventory of know-how, resources and attitudes regarding hoof health.

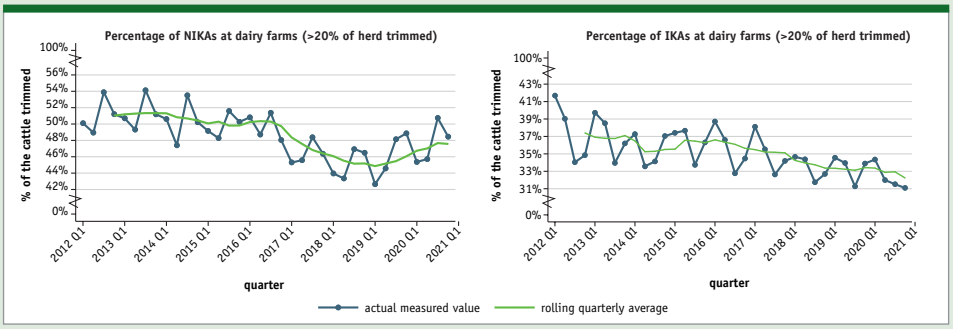


Figure 3. Percentage of non-infectious hoof diseases (NIKAs) and infectious hoof diseases (IKAs) at farms participating in DigiKlauw, of which at least 20 percent of the herd was assessed by the hoof trimmer.

Fertilise pastures with selenium?

Over the past year, GD received a few notifications of extremely high concentrations of selenium in silage following treatment with a selenium-based fertiliser.

In practice, some of the pastures are fertilised with selenium in order to increase its content in the first cut. Selenium is an essential trace element for effective functioning of cattle. While a deficit is undesirable, an excess can be equally harmful. The fertilisation process increases the selenium concentration in silage. As in the case of other minerals and trace elements, it is useful to determine the selenium concentration in the silage. Based on this analysis, your feed advisor can calculate how much extra selenium the animals need via concentrated feed, minerals or other feed. This will often result in concentrated feed and minerals being required, without or with a reduced content of selenium. Roughage is certainly not always analysed in practice, with the risk of possible excessive selenium. Before fertilising your pastures with selenium, we therefore advise you to discuss the necessity with your feed advisor, an alternative being to opt for the provision of extra selenium for your cattle in the form of concentrated feed and/or feed minerals.

Large-scale persistent coughs in dairy cattle due to lungworm

The Veekijker received calls concerning three dairy farms this quarter, suffering from coughs and a production drop in keeping with a lungworm infection. The dairy cattle had been grazing outdoors for many years. The problems began around July, were large-scale and persistent, despite treatment with a deworming agent. One farm was actually shown to have antibodies to lungworm. At the two other farms, there was no direct presence of antibodies to lungworm. The histological presentation of lung tissue in two cows from one farm upon necropsy was, however, indicative of a recently occurring lungworm infection (and/or oversensitivity to lungworm). In November, a bulk milk sample from both farms tested positive for lungworm antibodies. This may have been due to a large-scale clinical reaction to the larval stages alone (reinfection syndrome); the antibody test can only detect antibodies to the adult stages of lungworm. Following deworming, the dairy cattle were found to be grazing contaminated pastures, which increases the risk of reinfection. A number of animals also developed fever, (chronic) pneumonia and pulmonary constriction. Further testing did not detect *Mycoplasma bovis*, IBR, salmonella or BVD. There is as yet no knowledge on resistance development to deworming agents among cattle. At all three farms, the coughing problems were reduced a few months after the cattle had been housed indoors, but did not disappear completely. It is advisable to vaccinate young cattle against lungworm before the following grazing season.

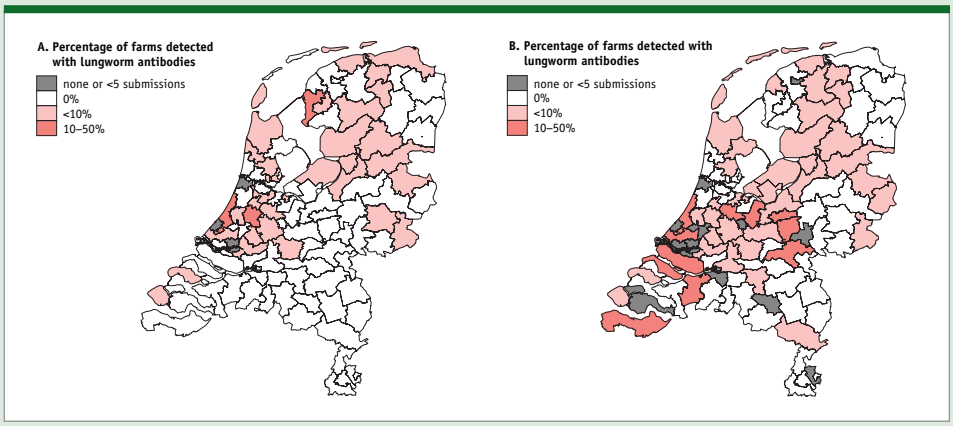


Figure 4. Percentages of participating farms in the 'Worm infections in bulk milk' subscription, showing (extremely) high levels of lungworm antibodies in bulk milk, in 2020 a and 2021 b

Last autumn, GD conducted bulk milk testing within the subscription scheme for 'Worm infections in bulk milk'. The percentages of bulk milk samples containing (extremely) high levels of lungworm antibodies had increased versus 2020, but were relatively low versus the period until 2017 (Figure 4). This is in keeping with the weather: there was more rainfall in 2021, following a number of consecutive dry and hot summers.

When (extremely) high levels of lungworm antibodies are detected in bulk milk, the young cattle's immunity development may not have been optimal for the past one to two years. Another possibility is that the risk of infection was so low due to drought in the previous years that the cattle only became infected for the first time this year.

Animal health of cattle in the Netherlands in the fourth quarter of 2021

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Category (AHR)	Surveillance Highlights Fourth Quarter 2021
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	*Campylobacter fetus spp. veneralis* not detected.
Bovine Viral Diarrhoea (BVD)	Viral infection. Control programme compulsory for dairy farms, voluntary for beef cattle farms.	C, D, E	86 percent of dairy farms have BVD-free or BVD-unsuspected status. This is 17 percent among voluntarily participating non-dairy farms.
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.
Enzootic Bovine Leucosis (EBL)	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.
Infectious Bovine Rhinotracheïtis (IBR)	Viral infection. Control programme compulsory for dairy farms, voluntary for beef cattle farms.	C, D, E	77 percent of dairy farms have IBR-free or IBR-unsuspected status. This is 20 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	80 percent of dairy farms have Paratuberculosis Programme Netherlands (PPN) status A (unsuspected). More incoming animals with a lower status.
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	*Tritichomonas foetus* 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.	E	No infections detected in submitted aborted foetuses.

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Table continuation

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Category (AHR)	Surveillance Highlights Fourth Quarter 2021
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.	-	One farm with antibodies in bulk milk. Again, more incoming animals with a status lower than leptospirosis-free.
Listeriosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. Occasional infection detected in cattle.	-	Infections detected in one cow submitted for necropsy and detected twice in aborted foetuses.
Salmonellosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. Control programme compulsory for dairy farms, voluntary for beef cattle farms.	-	95.5 percent of dairy farms had 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 foetuses.	-	Three infections detected. Cultivated once at necropsy.
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).	-	No infections detected.
Other infectious diseases in cattle			
Malignant Catarrhal Fever (MCF)	Viral infection. Infections with Ovine herpes virus type 2 occur occasionally in the Netherlands.	-	Three infections detected at necropsy.
Liver fluke	Parasite. Liver fluke is present in the Netherlands, particularly in wetland areas.	-	Infections detected 46 farms and in two cattle submitted for necropsy.
Neosporosis	Parasite. An important infectious cause of abortion in the Netherlands.	-	Infections detected in six submitted aborted foetuses.
Tick borne diseases	Vector borne diseases. Ticks infected with *Babesia divergens, Anaplasma phagocytofilia and Mycoplasma wenyonii* are present in the Netherlands.	-	No infections detected.
From monitoring	Increased proportion of older dairy cows submitted for pathological examination.		
Data analysis	Declined mortality of non-registered calves continues. Mortality in registered calves has stabilised.		
	Bulk milk cell count continues to rise.		
	Slightly rising trend of antibiotics administered to adult cows at dairy farms.		
Resistance to antibiotics at dairy farms	Increased percentage of milk samples with multi-resistant *S. aureus*.		
Resistance to antibiotics at non-dairy farms	Percentage of multi-resistant isolates remains high.		

Monitoring DIERGEZONDHEID

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 – rapid identification of health issues on the one hand and monitoring trends and developments on the other. Together, we team up for animal health, in the interests of animals, their owners and society at large.

GD2557/03-22