

Monitoring

ANIMAL HEALTH



Endocarditis caused by *Erysipelothrix spp.* in sheep

During the months of October and November, a number of sheep were submitted for pathological examination, and endocarditis was diagnosed as a result of an infection with *Erysipelothrix rhusiopathiae*. These



ubiquitous, rod-shaped bacteria cause erysipelothritic polyarthritis in small ruminants, but appear as commensals and pathogens in various vertebrates, including birds and mammals. *Erysipelothrix spp.* is a zoonotic agent and occasionally also infects people. These bacteria are widespread in nature and are capable of surviving in farm surroundings for at least a number of weeks. Swine are an important reservoir. Bacteria can be excreted in faeces, urine, saliva and nasal discharge by both healthy and sick animals. Bedding, soil, water and feed can become infected by carrier animals or wild birds, which in turn can result in infection and disease. Infection with *E. rhusiopathiae* can cause



arthritis in many joints in older lambs, or lameness following the use of foot baths or sheep dips, and is then generally known as 'post-dipping-lameness'. Other manifestations include skin infections, endocarditis, pneumonia and sepsis. Possible infection routes occur through wounds, for example after shearing, orally or via the umbilical cord of newborn lambs.

Mucosal ulceration as a result of *Bibersteinia trehalosi*

During October and November, a number of lambs were submitted for pathological examination in which ulcerations were detected in the oral mucosa and the mucosa around the larynx and oesophagus. Bacteriological examination showed that this was the result of an infection with *Bibersteinia trehalosi*.

B. trehalosi is one of the main causes of respiratory infections in small ruminants, along with *Mannheimia haemolytica* and *Pasteurella multocida*. The collective name for infections caused by these bacteria is pasteurellosis. When compared with *M. haemolytica*, *B. trehalosi* causes a systemic infection more frequently. In many cases, such an infection is manifested by acute mortality. If the disease progresses more

slowly, the animals appear lethargic with pulmonary constriction. During pathological examination, subcutaneous haemorrhaging may be found in the chest cavity, as well as lesions around the pharynx, oesophagus and rumen. In stressful conditions, *B. trehalosi* likely multiplies in the tonsils, resulting in necrotic lesions in the oral and throat mucosa. Most outbreaks of systemic pasteurellosis occur in lambs six to nine months of age, in the months of October, November and December. Typical signs often begin with the loss of a few animals within a short period of time. The start of the disease often coincides with a time of stress, such as a change in feed or being moved to other pastures.

Representative

Whether results of pathological examinations can explain the clinical presentation observed within a herd is not always easy to say. Animals submitted for post mortem examination need to represent clinical signs typical for the disease. In addition, animals need to be submitted as soon as possible post mortem and preferably not have received antibacterial treatment. To preserve carcasses, it is advised to cool them until collected. In all cases, a comprehensive anamnesis is important in order to assist the pathologist in the specific choice of appropriate testing. If you have any questions or concerns, feel free to contact the Veekijker. In case animal health issues persist, it may be useful to submit other representative animal for post mortem examination, once again accompanied by a comprehensive anamnesis.

Many cases of liver fluke in the month of October

In October 2021, the Veekijker received several reports of liver fluke infections on sheep farms and was diagnosed frequently by post mortem examination. Infections have also been diagnosed in lambs of 6 to 7 months of age.



The Veekijker also received questions about resistance of liver fluke to triclabendazole, the only registered active ingredient that is effective at all stages of liver fluke. Resistance to triclabendazole was first established in the province of Noord-Holland in the late 1990s, and was subsequently found at many other locations in the Netherlands.

2020 was the first year since the 1960s that there was no active liver fluke monitoring. Due to financing issues, the choice was made to stop the subsidy for the national working group on liver fluke prognosis. Liver fluke is a disease caused by the *Fasciola hepatica* parasite. The liver fluke snail is an essential part of the liver fluke cycle. Without liver fluke snails there is no liver fluke. There is a risk of infection with liver fluke in many regions in the Netherlands, depending among other factors on the soil moisture. Rising groundwater levels may create favourable living conditions for the liver fluke snail,

resulting in an increased risk of occurrence of liver fluke infections. Besides basic monitoring, there is currently no insight into the development of liver fluke infections nor into preventing resistance to agents used in the Netherlands.

Farmers with sheep in known liver fluke regions are advised to assess the degree of infection on the basis of testing. There are various ways of testing for a liver fluke infection. The preferred manner of testing depends on the timing and on the group of animals to be tested. The serum ELISA can detect an infection in ruminants from approximately four weeks following the intake of infectious cysts. From 10 to 12 weeks following the intake of infectious cysts, liver fluke eggs will be found in the faeces and can be detected by testing the faeces. Faeces testing can be conducted in individual animals, but also in groups of animals by means of a pooled sample.

Copper intoxication in young lambs

At the end of August, a three-month-old lamb was submitted for pathological examination. Several lambs had suddenly died at the farm within a two-week period, whereby yellow mucosa were observed. Several animals in the herd appeared lethargic. This concerned a group of lambs reared on the drinking machine with ad libitum concentrated feed at their disposal. The farm had suffered a copper deficit in the past. The concentrated feed in question therefore had a supplementary copper content.

The lamb submitted for pathological examination was diagnosed with copper intoxication, with liver copper values of 800 ppm. Copper absorption in young lambs is much more efficient than in adult ruminants and can be 60-90% versus 3-7% in adult animals. In all probability, the availability of copper during the milk-feeding period, supplemented with the concentrated feed containing copper, resulted in copper accumulation in the liver.

There is a small margin between copper excess and deficiency. In case of doubt, the advice is to conduct further testing into the copper status of animals.

Animal health barometer Small Ruminants

Veterinary diseases	Brief description	Category	Quiet ¹	Increased attention ²	Further investigation ³
Articles 2.1.a and 2.1.b Designation of animal diseases 'Rules for Animal Health'/Implementing Regulation (EU) 2018/1882 of the Animal Health Law (EU) 2016/429 (Category A disease)					
Infectious pleuropneumonia in goats (CCPP) (<i>Mycoplasma capricolum</i> subs. <i>capripneumoniae</i>)	Has never been present in NL.	A+D+E	*		
Foot and Mouth Disease (FMD)	No FMD in the Netherlands since 2001.	A+D+E	*		
Infection with ovine rinderpest (commonly known as PPR, peste des petits ruminants)	Has never been present in NL.	A+D+E	*		
Infection with Rift Valley fever virus (RVF)	Has never been present in NL.	A+D+E	*		
Sheep pox and goat pox	Has never been present in NL.	A+D+E	*		
Articles 2.1.a and 2.1.b Designation of animal diseases 'Rules for Animal Health'/Implementing Regulation (EU) 2018/1882 of the Animal Health Law (EU) 2016/429 (Category B through E)					
Infection with <i>Brucella abortus</i> , <i>B. melitensis</i>	Over the course of 2021, GD has frequently communicated with farms to motivate them to submit samples for monitoring of <i>Brucella melitensis</i> and has achieved the required numbers for 2021 to achieve free status.	B+D+E	*		
Infection with the rabies virus	Extremely rarely diagnosed in bats.	B+D+E			
Infection with the bluetongue virus (serotypes 1-27)	The Netherlands has been officially free from BT since 2012. There are a number of sources of BT within Europe. BTV-8 is found in Germany, Luxembourg and Belgium, for example. Many outbreaks of BTV-4 around the Mediterranean.	C+D+E	*		
Epididymitis in sheep (<i>Brucella ovis</i>)	Examination of rams for export purposes.	D+E	*		
Infection with <i>Mycobacterium tuberculosis</i> - complex (<i>M. bovis</i> , <i>M. caprae</i> , <i>M. tuberculosis</i>)	The Netherlands has been officially free from bovine tuberculosis since 1999.	D+E	*		
Anthrax (<i>Bacillus anthracis</i>)	Last registered outbreak in cattle in 1993. No infections registered since then.	D+E	*		
Paratuberculosis (<i>Mycobacterium avium</i> subs. <i>paratuberculosis</i>)	Regular cases especially in dairy goats and occasionally in sheep.	E	*		
Q fever (<i>Coxiella burnetii</i>)	In 2016, the final dairy goat farm was certified free from infection with <i>Coxiella burnetii</i> .	E	*		
Echinococcosis	No confirmed cases in recent years.		*		
Trichinellosis	No known cases of trichinellosis in sheep or goats		*		

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Veterinary diseases	Brief description	Category	Quiet ¹	Increased attention ²	Further investigation ³
Article 2.1.c Designation of animal diseases 'Rules for Animal Health' of the Dutch Animal Act					
Transferable TSEs (scrapie, BSE)	Hardly any cases among sheep in the past 10 years. In the annual random sampling by GD, all the rams examined (once again) had the required genotype. In goats, the first case of scrapie was in 2000 and the last case in 2001.		*		
Article 3a.1 Reporting of zoonoses 'Rules for Animal Husbandry' of the Dutch Animal Act					
Campylobacteriosis (<i>Campylobacter</i> spp.)	A few cases each year.		*		
Leptospirosis (<i>Leptospira</i> Hardjo)	No cases in sheep or goats for many years.		*		
Listeriosis (<i>Listeria</i> spp.)	Encephalitis caused by <i>Listeria monocytogenes</i> is regularly found in sheep but especially in dairy goats. It is unknown how long listeria bacteria are excreted into the milk. Both <i>L. monocytogenes</i> and <i>L. ivanovii</i> can cause abortion in sheep and goats.		*		* Further investigation is required into the types found in people and animals.
Salmonellosis (<i>Salmonella</i> spp.)	Since 2016, recurrent and large-scale losses of kids at dairy goat farms caused by a multiresistant <i>S. Typhimurium</i> . Also a number of cases of illness in people caused by the same MLVA strain of the bacteria. The infection source is unknown; it is also unknown where the bacteria exist outside the kidding season. In 2021, <i>Salmonella</i> spp. was detected in several aborted foetuses submitted from sheep farms; further typification showed this to be <i>S. diarizonae</i> .		*		* Further investigation has been initiated for dairy goats.
Yersiniosis (<i>Yersinia</i> spp.)	A few cases each year. Detected at three goat farms in 2020, as the cause of diarrhoea and mortality.		*		
Toxoplasmosis (<i>Toxoplasma gondii</i>)	A few confirmed cases each year; high seroprevalence among sheep and goats.		*		
Other OIE list diseases					
Enzootic abortion (<i>Chlamydia abortus</i>)	One of the main causes of abortion in goats and sheep for years.		*		
Caprine arthritis encephalitis (CAE)	Commonly occurring disease whereby the pathogenic virus sometimes behaves differently depending on the size of the farm.		*		
Maedi-Visna virus (MVV)	(Most) significant infectious disease at large farms.		*		
Tularaemia (<i>Francisella tularensis</i>)	Since 2011 infected hares are regularly detected, and a few human tularaemia patients in the Netherlands.		*		
Mycoplasma agalactiae	No known cases in the Netherlands.		*		
Nairobi sheep disease	Has never been present in NL.		*		
Heartwater (<i>Ehrlichia ruminantium</i>)	Has never been present in NL.		*		
Infections with <i>Bunyaviridae</i> (other than Rift Valley fever virus and Crimean-Congo haemorrhagic fever)	Annual infections with the SBV since 2012, resulting in congenital abnormalities in lambs.			*	

Table continuation

Veterinary diseases	Brief description	Category	Quiet ¹	Increased attention ²	Further investigation ³
From monitoring					
Copper toxicity	Copper intoxication is regularly detected by means of pathological examination, at both sheep and goat farms. It is not always easy to discover the source of such excesses.			*	
Distomatosis (liver fluke) (<i>Fasciola hepatica</i>)	Striking number of necropsies finding distomatosis. Alertness to liver fluke infections is advised in known liver fluke regions.			*	
Caseous lymphadenitis (CL) (<i>Corynebacterium pseudotuberculosis</i>)	Outbreak of CL in a herd of Schoonebeekers and Drentse Heide sheep. Due to frequent animal movements, the infection is probably not limited to this herd.			*	
Pithomycotoxicosis (<i>Pithomyces chartarum</i>)	A number of notifications of photosensitivity in sheep and cattle.			*	

¹ Quiet: no action required or action is not expected to result in a clear improvement.

² Increased attention: alert to an anomaly.

³ Further investigation: further investigation is ongoing or required.



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.