

Monitoring

ANIMAL HEALTH



Abortion in small ruminants

In spring 2021, GD received 77 submissions for pathological examination, with a total of 126 fetuses and occasional placentas, as a result of abortion. In thirty cases, no infectious cause could be identified. Besides these non-infectious causes, the well-known infectious causes which in many cases are also zoonotic pathogens, were once again detected. The latter proves the importance of communication regarding the risks of zoonoses during the lambing period and particularly in case of abortion. There was a remarkable number of abortions caused by salmonellosis and listeriosis. The *Salmonella* spp. detected were further typified, and all

cases were found to be the result of *Salmonella enterica* subsp. *diarizonae*. *Listeria ivanovii* was the most commonly detected type of *Listeria* spp. Frequently, indications of an infectious cause are observed without an actual causative agent being found. Therefore, it remains important to submit aborted material for pathological examination not only from a management related point of view, but also because of the zoonotic potential of many of the infectious causes of abortion in small ruminants. An abnormal number of abortions requires compulsory notification (see www.NVWA.nl)



Chlamydia pecorum as cause of abortion

Early March 2021, GD received an aborted kid for pathological examination. This was a fresh, premature foetus with no sign of any macroscopic anomalies. The foetus was submitted without placenta. Histology of lung tissue showed an extensive exudative inflammation with indications for interstitial pneumonia. In combination with a positive specific colouration for *Chlamydia* spp., this is very suggestive of chlamydiosis. A specific PCR on abomasal content eventually confirmed it to be an infection with *Chlamydia pecorum*. Generally speaking, anomalies of the organs in aborted foetuses as the result of chlamydiosis are rarely seen, and histology of the placenta is generally the decisive factor. The vast majority of abortion cases caused by *Chlamydia* spp. in small ruminants is the result of *Chlamydia abortus*. Very occasionally, *C. pecorum* also results in abortion in ruminants. *C. pecorum* is more commonly known as a pathogen of arthritis and keratoconjunctivitis. Whereas *C. abortus* is a well-known zoonotic pathogen, the risk of humans becoming infected with *C. pecorum* is unclear, but is expected to be minor.

Floppy kid syndrome in goat kids

In March 2021, the Veekijker was approached by a veterinarian concerning an acute increase in mortality among male kids on a dairy goat farm. At the farm, doe kids were immediately fed colostrum formula followed by milk formula; bucks remained with the doe until they left the farm. This management system had been used for many years, with good results. This year, no problems did occur raising the first group of kids, also no problems occurred with the doe kids in the second group. Around one week of age, the majority of bucks became acutely weakened, showing a drunken gait, rapid breathing, and a swollen abdomen, followed by death within one to two days. Some were submitted for pathological examination because of their lack of reaction to treatment for pneumonia. This showed a marginal degree of pneumonia, which could not explain the clinical signs the issues and mortality rates. They also had an overfull abomasum with curdled milk, but almost empty small intestines. Other than that, no striking findings were present. The following kids submitted for pathological examination did not have any lung problems

but did once again have an overfull abomasum and empty small intestines.

This disorder is known as floppy kid syndrome. It is a form of acidosis, probably metabolic, which generally reacts well to a dose of bicarbonate, but the cause remains unclear. It generally occurs in kids aged five to fifteen days old who have not been sick and have not been treated with bicarbonate or antibiotics. It has been described in kids being given milk formula and also in kids kept with their mothers. One of the identified causes is excessive intake of milk. However, it is also quite feasible that the overfull abomasum full of curdled milk found at necropsy is a consequence of the problem rather than the cause. In order to discover the cause of this issue which can sometimes result in massive losses, we are asking farmers and veterinarians to submit kids for pathological examination of well-documented floppy kids displaying the symptoms described above.

CCN in weaned goat kids

In April 2021, the Veekijker was contacted following an increase in mortality of goat kids around the time of weaning. Kids lost weight, showed a hunched posture and displayed neurological symptoms shortly before death. Kids were fed a food ration comprising pellets and straw. On the advice of GD, kids were submitted for pathological examination. Histological examination of the brains identified a serious form of cerebrocortical necrosis (CCN). CCN is diagnosed in small ruminants on regular

basis, but especially in goat kids around the time of weaning. One of the causes of CCN is a thiamine deficiency (vitamin B1). Under normal circumstances, sufficient thiamine is produced by bacteria found in the rumen. In case the ruminal flora becomes altered, the production of thiamine can be disturbed and will be broken down by bacteria that produce thiaminase. An important risk factor for alterations to the ruminal flora is feeding a ration rich in carbohydrates and lacking structure, as well as excessive use of

antibiotics. In the above-mentioned case, it was noticeable that the animals' appetite increased considerably when fed other roughage than straw.

When CCN is discovered in a flock, the solution may be found in treating the entire flock with vitamin B1. However, it remains important to take a critical look at the feed ration of growing kids, as the focus must be on optimising development of the rumen.

Copper toxicity

Pathological examination quite regularly detects copper intoxication in small ruminants. In recent cases, copper levels found in the liver have been in excess of 1000 ppm. Copper intoxication is found both in backyard animals and at professional sheep and goat farms. The clinical symptoms vary; it sometimes concerns a single case, but more often a general flock problem. The practical situation teaches us that it is not

always simple to establish the source of excess copper. However, that source generally lies in the feed ration provided.

Once copper intoxication has been detected, it is important to gain insight into the severity of copper accumulation in the flock. The first step is to take a critical look at the feed ration, to check for any excess copper. GD regularly advises testing of the copper

levels in the feed ration. Moreover, regular analysis of (pooled) liver tissue can provide an impression of the mineral accumulation within the flock. Once an excessive copper accumulation has occurred, it may take many years for the copper levels in the liver to return within the normal parameters, as in some of the animals this will never occur.

Animal health barometer Small Ruminants

Veterinary diseases	Brief description	Quiet ¹	Increased attention ²	Further investigation ³
Article 15 diseases (compulsory notification and eradication)				
<i>Brucella melitensis</i> -brucellosis	Over the course of 2020, GD has frequently communicated with farms to motivate them to submit samples, and has achieved the required number.	*		
<i>Coxiella burnetii</i> -Q fever	In 2016, the final dairy goat farm was certified free from infection with <i>Coxiella burnetii</i> .		*	
Foot and Mouth Disease (FMD)	No FMD in the Netherlands since 2001.	*		
Scrapie	Hardly any cases among sheep in the past 10 years. In the annual random sampling, all the tups examined had the required genotype. In goats, the first case of scrapie was in 2000 and the last case in 2001.	*		
Bluetongue (BT)	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.		*	
Ovine rinderpest (PPR - Peste des petits ruminants)	Has never been present in NL.	*		
Sheep pox and goat pox	Has never been present in NL.	*		

Veterinary diseases	Brief description	Quiet ¹	Increased attention ²	Further investigation ³
Article 100 diseases (compulsory notification)				
Salmonellosis	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 remains outside the kidding season. <i>Salmonella enterica</i> spp. <i>diarizonae</i> has resulted in abortions at numerous sheep farms.		*	* Further investigation has been initiated for dairy goats.
Campylobacteriosis	A few cases each year.	*		
Listeriosis	Listeria encephalitis is regularly found in sheep but especially in dairy goats. It is unknown how long listeria is excreted into the milk. Both <i>L. monocytogenes</i> as <i>L. ivanovii</i> can cause abortion in sheep and goats.		*	* Further investigation is required into the types found in people and animals.
Toxoplasmosis	A few confirmed cases each year; high seroprevalence among sheep and goats.	*		
Echinococcosis	No confirmed cases in recent years.	*		
Yersiniosis	A few cases each year. In 2021, <i>Yersinia enterocolitica</i> was detected once as the cause of abortion and occasionally as the cause of enteritis at a goat farm.		*	
Leptospirosis caused by <i>L. Hardjo</i>	No cases in sheep or goats for many years.		*	
MV (Maedi-Visna)	Economic (most) significant infectious disease at large farms.		*	
Other OIE list diseases in the Netherlands subject to compulsory notification				
<i>Chlamydia abortus</i> -enzootic abortion	One of the main causes of abortion in goats and sheep for years.		*	
<i>Fasciola hepatica</i> -liver fluke	A few acute and chronic infections in winter of 2020/2021. Alertness is required in areas with a raised groundwater level. Due to the Liver Fluke Prognosis Working Group having stopped its activities, farmers can no longer be proactively informed on the status regarding liver fluke.	*		
<i>Mycobacterium avium</i> subsp. <i>paratuberculosis</i> -paratuberculosis	Regular cases especially in dairy goats and occasionally in sheep.		*	
Ecthyma	As in previous years.		*	
<i>Francisella tularensis</i> -tularemia	Since 2011 infected hares are regularly detected, and a few human tularemia patients in the Netherlands.		*	
Caprine arthritis encephalitis-CAE	Commonly occurring disease whereby the pathogenic virus sometimes behaves differently depending on the size of the farm.		*	

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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.

Table continuation

Veterinary diseases	Brief description	Quiet ¹	Increased attention ²	Further investigation ³
From monitoring				
Diarrhoea in dairy goats	At numerous dairy goat farms, adult goats regularly suffer from acute diarrhoea; the diarrhoea can be mild but can also be watery or mixed with bloody discharge. These animals sometimes recover spontaneously but the impression is that many cases require antibiotics in order to save the animal's life. Feed plays a particularly important role. At a number of farms, anomalies in the forestomach are already in place during rearing.		*	*
Jaagsiekte	Introduction of jaagsiekte to the Netherlands due to import of a tup from Scotland in October 2020. Diagnosis was confirmed in March 2021. Jaagsiekte was last diagnosed in the Netherlands in 1978.		*	*
<i>Pithomyces chartarum</i>	A number of cases of photosensitivity were reported at numerous sheep farms in autumn. Elevated blood liver enzymes were often detected. The pathogen was also found in grass samples at farms experiencing problems. Recently, animals have been submitted for necropsy showing possible residual symptoms of pithomycotoxicosis.		*	*
Copper toxicity	Copper intoxication is regularly detected by means of pathological examination, at both sheep and goat farms. It is not always an easy task to discover the source of such excesses.		*	
Floppy kid syndrome	Can result in increased losses of various degrees at goat farms. The underlying aetiology is as yet unknown. Examination of affected kids is required for a better understanding of this disorder.			*

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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.