Monitoring ANIMAL HEALTH

Cattle | July 2020

New diagnosis by solving the puzzle together

The Veekijker regularly receives questions that require research. We are often able to make a diagnosis because of our ability to quickly connect the various disciplines. Occasionally we find something new, such as recently: cerebrocortical necrosis (CCN) due to sulphur poisoning. While it is already known abroad, it is new to the Netherlands as far as we know. It's important that vets take this into account as a possible cause of death.

Cattle veterinarian Jasper het Lam received a telephone call about a yearling in calf, lying on her side with acute neurological symptoms. The animal died that day and within three days, another seven cattle from the same barn had died as well. Jasper took a closer look at this case and discussed it with a number of colleagues. "The vet was standing in the barn when he called the Veekijker. We consulted on his options, and it was clear that the animal was in a bad way. Due to a number of animals dying within a short period of time, I advised him to submit one for necropsy. We needed more information about the possible cause of death."

Figure 1: White goosefoot

Various signs pointed to: CCN caused by sulphur poisoning

The pathological examination showed acute CCN (cerebrocortical necrosis) in combination with a copper deficiency. CCN results in brain cells dying. Toxicologist Deon van der Merwe then set to work, as the diagnosis of CCN alone says nothing about the actual cause. As there had been no issues in an adjacent barn where the cattle were fed the same water and concentrated feed, he focused on the silage. Our botanical examination showed that there was a high concentration of white goosefoot in a sample of the silage bale. "Analysis of the silage then showed the CCN to have been caused by sulphur poisoning. The high sulphur level had probably been caused by an accumulation of sulphur in the white goosefoot plant. Increased levels of sulphur also slow the absorption of copper in the intestinal tract, and there was already a deficiency in the feed itself. While sulphur poisoning has been described in American literature as a cause of CCN, as far as we know, it has not been diagnosed in the Netherlands before." This issue was resolved thanks to good cooperation between the practitioner, Veekijker, pathologist and toxicologist.

Surprise plant in the feed

White goosefoot (Figure 1) is regularly found in the Netherlands and is not necessarily poisonous. Under normal circumstances, it can even be a good feed component. However, when there is a high level of biologically available sulphur in the soil, the sulphur content can accumulate in this plant. The silage bale in question had been sourced from a nature reserve. It later became apparent that white goosefoot grew prolifically in a known wet spot in this field. Jasper: "Be aware of what you're feeding and of the composition. It's important to have your silage analysed before feeding, in order to determine a balanced diet together with your feed advisor."

Jasper het Lam, cattle veterinarian GD Veekijker
Evert van Garderen, pathologist
Deon van der Merwe, toxicologist

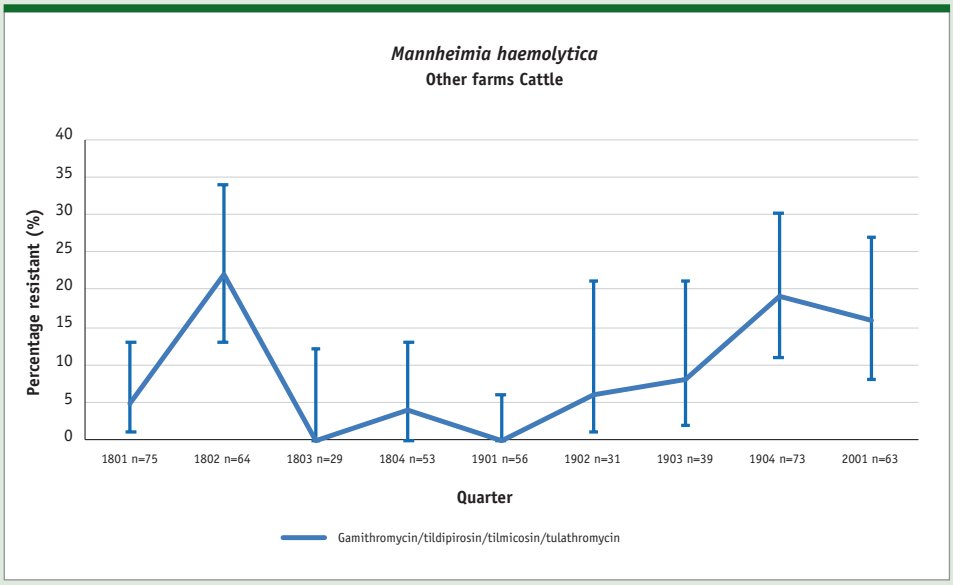
Veterinary environmental toxicology (VET)

Establishing and maintaining a network is an important aspect of veterinary environmental toxicology (VET). Information can then be exchanged on toxicological issues that are important for the Dutch dairy farming sector. A significant step was recently taken when a regular contact moment between GD and the NVIC was introduced, alongside their incidental contact (NVIC is the Dutch national toxicology information centre).

The NVIC focuses on cases of poisoning in people and companion animals, but they also receive queries about farm animals; GD mainly focuses on the farming sector. A variety of toxicological problems apply to both branches, for example the oak processionary caterpillar. This exchange of information is useful for both parties in order to detect toxicological problems in time and deal with them effectively.

Increase in percentage of *Mannheimia haemolytica* isolates resistant to macrolides

The percentage of *Mannheimia haemolytica* isolates that are resistant to macrolides (gamithromycin/tildipirosin/tilmicosin/tulathromycin) in cattle at non-dairy farms has increased over the past six months. It is 16 percent in the current quarter and was 19 percent in the fourth quarter of 2019 (see Figure). This percentage had only previously been so high in the second quarter of 2018 (22 percent). The percentage is normally below or around 10 percent.



Salmonella Enteritidis at dairy farm

At the beginning of February, *Salmonella* Enteritidis was detected a faecal sample from a sick cow. This type of salmonella occurs in poultry and is intensively combated there, also because of its zoonotic nature. Following these results, the Veekijker veterinarian contacted the practitioner, and the farm was found to process its own dairy products. Both the practitioner and GD reported their findings to the Dutch Food and Consumer Product Safety Authority (NVWA) and this observation was discussed during the notifications meeting.

Favourable developments in calf mortality

There has been a decline in all calf mortality rates, at both dairy and veal farms, from 2018 through to the end of the second quarter of 2019. In the most recent year (2018/19), there were more farms without mortality, more farms with low mortality and fewer farms with high mortality, versus 2016 and 2017.

Animal characteristics linked to calf mortality were the gender of the calves, the parity of the mother animal (first or subsequent calves) and whether the calves were part of a multiple birth. The conclusion was therefore that extra vigilance during the calving process in first calf heifers contributes to lower calf mortality, and that further improvements can be made at farms showing a big difference between mortality of heifer and bull calves. Preventative action taken to improve calf rearing, which often includes boosting calves' immune system by means of vaccination, was also associated with lower calf mortality. Problems during the start-up phase of the cows were linked to higher calf mortality. There was also higher calf mortality at dairy farms during extremely hot or cold outdoor temperatures.

The implementation of the Calf Mortality Index, KalfOK and the calf monitoring system (KalfVolgSysteem (KVS)) resulted in a clear reduction in calf mortality. Such instruments give farmers and their veterinarians insight into the data, making them a useful tool in the continuous optimisation of young cattle rearing. Along with the factors mentioned above, this study has provided farmers with a number of starting points to achieve further reduction in calf mortality. The August edition of GD Herkauwer will discuss the findings in more detail.

Inge Berends,
Epidemiologist

Animal health barometer for cattle, first quarter 2020

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Surveillance – Highlights First Quarter 2020
Article 15 GWWD (Health & Welfare Act) compulsory reportable and treatable diseases (diseases named in article 2 of the 'Rules for prevention, control and monitoring of infectious animal diseases and zoonoses and TSEs')		
Bluetongue (BT)	Viral infection. The Netherlands has been officially disease-free since 2012 (all serotypes). Annual screening.	The Netherlands BTV-free, no infections detected. BTV-8 Belgium.
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.	Ten re-tests, no infections detected.
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.
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.	No infections detected.
Lumpy skin disease (LSD)	Viral infection. The Netherlands is officially disease-free.	Infections have never been detected.
Anthrax (zoonosis, infection via animal contact)	Bacterial infection. Not detected in the Netherlands since 1994. Monitoring via blood smears from fallen stock.	No infections detected.
Foot and Mouth Disease (FMD)	Viral infection. The Netherlands has been officially disease-free since 2001.	No infections detected.
Rabies (zoonosis, infection via bite or scratch wounds)	Viral infection. The Netherlands has been officially disease-free since 2012 (illegally imported dog).	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.	No infections detected.
Article 100 GWWD (Health & Welfare Act) compulsory reportable diseases (diseases named in article 10 of the 'Rules for prevention, control and monitoring of infectious animal diseases and zoonoses and TSEs')		
Campylobacter fetus ssp. venerealis* and *Tritrichomonas foetus	Bacterial infection. The Netherlands has been disease-free since 2009. Monitoring of AI and embryo stations, and in animals for export.	No infections detected.
Leptospirosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. Control programme compulsory for dairy farms, voluntary for non-dairy farms.	96 percent of dairy farms have the *L. hardjo*-free status. Two infections detected upon bulk milk monitoring (import).
Listeriosis (zoonosis, infection via inadequately prepared food)	Bacterial infection. Occasional infection detected in cattle.	Four infections detected in an aborted foetus, in cattle submitted for necropsy and in a milk sample.
Salmonellosis (zoonosis, infection via animal contact or inadequately prepared food)	Bacterial infection. Control programme compulsory for dairy farms, voluntary for non-dairy farms.	18 infections detected at necropsy. 97 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.	Two infections detected in an aborted foetus and in a cow submitted for necropsy.

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Table continuation

VETERINARY DISEASES	SITUATION IN THE NETHERLANDS	Surveillance – Highlights First Quarter 2020
Other OIE-list diseases in the Netherlands subject to compulsory reporting		
Bovine Viral Diarrhoea (BVD)	Viral infection. Control programme compulsory for dairy farms, voluntary for non-dairy farms.	81 percent of dairy farms have BVD-free or BVD-unsuspected status. This is 16 percent among voluntarily participating non-dairy farms.
Infectious Bovine Rhinotracheïtis (IBR)	Viral infection. Control programme compulsory for dairy farms, voluntary for non-dairy farms.	75 percent of dairy farms have IBR-free or IBR-unsuspected status. This is 19 percent among voluntarily participating non-dairy farms.
Paratuberculosis	Bacterial infection. Control programme compulsory for Dutch dairy farms. 99 percent has PPN status.	78 percent of dairy farms have Paratuberculosis Programme Netherlands (PPN) status A (unsuspected).
Tick borne diseases	Vector borne diseases. Ticks infected with *Babesia divergens*, *Anaplasma phagocytofilia* and *Mycoplasma wenyonii* are present in the Netherlands.	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.	One infection detected at necropsy.
Liver fluke	Parasite. Liver fluke is present in the Netherlands, particularly in wetland areas.	Infections detected at 21 farms.
Neosporosis	Parasite. An infectious cause of abortion in the Netherlands.	Infection detected in three submitted aborted foetuses.
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.	No infection was detected in submitted aborted foetuses.
From monitoring		
	Increase in numbers of Udder Cleft Dermatitis (UCD) as the main diagnosis (8 2020-1; total 12 2019). Once again, high supply of cattle at dairy farms with lower status	
Data analysis	Increase in dairy cattle mortality >1 year. This appears to be caused by an increase in the percentage of older cattle with a higher risk of mortality at dairy farms. Decrease in non-registered calf and registered calf mortality over the last few years	
Antibiotic sensitivity at non-dairy farms	Increase in the percentage of *Mannheimia haemolytica* isolates that are resistant to gamithromycin, tildipirosin, tilmicosin and tulathromycin over the past six months.	

Monitoring ANIMAL HEALTH

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 problems 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.

GD2239/07-20