INFECTIOUS DISEASES

# Seroprevalence of BRD pathogens on Dutch dairy farms: is bovine coronavirus involved?

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## INTRODUCTION

- Bovine respiratory disease (BRD) remains a leading cause of morbidity, mortality and economic loss to the cattle industry.
- In the last decade it has become obvious that besides bovine respiratory syncytial virus (BRSV) and bovine para-influenza type 3 virus (PI3), bovine corona virus (BCoV) can be involved as viral agent in this BRD complex.

## OBJECTIVE

The goal of the present study was to obtain data on the seroprevalence of BCoV on BRD problem farms in The Netherlands and to compare this seroprevalence to those of well-established respiratory pathogens.

## MATERIALS AND METHODS

- A cross sectional study on 63 Dutch dairy herds was conducted from October 2022 until March 2023. The selected herds did not implement any vaccination program against BRD in their young stock and all recently experienced BRD problems in young calves (less than five months old).
- On each farm serum samples of five randomly selected, three to six months old calves were collected.
- The samples were analysed for antibodies against BRSV, PI3, BCoV, *Mannheimia haemolytica* (Mh), and *Mycoplasma bovis* (Mb) by ELISA
- An in-house test was used to measure Mh and BRSV antibodies, whereas a commercial kit from IDEXX was used for PI3 antibodies. BCoV and Mb antibodies were determined using commercial Bio-X ELISA test kits.
- For each BRD pathogen herd-level and calf-level seroprevalence was determined and compared.

Bovine coronavirus can be considered as a major respiratory pathogen on BRD problem farms in The Netherlands.

In 89% of the BRD problem herds BCoV seropositive calves were detected and nearly 50% of those calves showed evidence of a recent contact with the virus.

On Dutch dairy farms with BRD problems *Mycoplasma bovis* seems to be of minor importance

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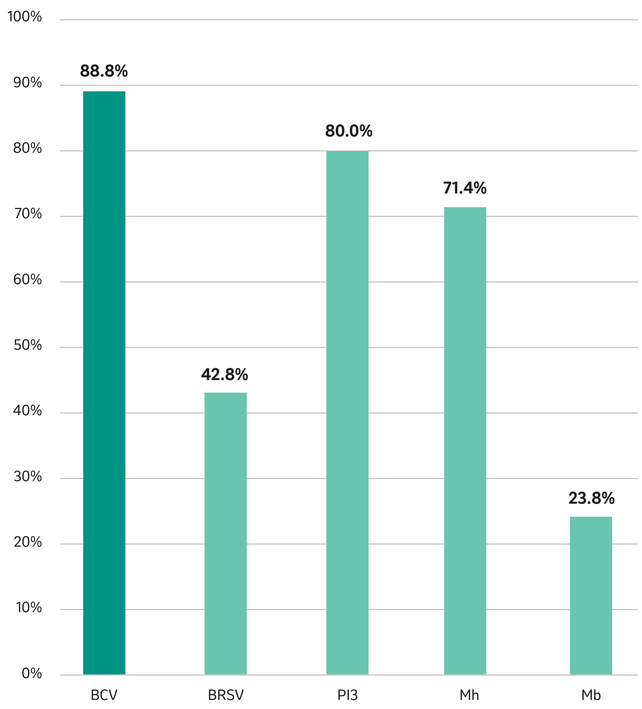
## RESULTS

- In 56 of the 63 BRD problem farms (88.8%) at least one animal with antibodies against BCoV was detected. BRSV antibodies were detected in 27 of the 63 problem herds (42.8%). The herd level seroprevalence for PI3, Mh and Mb was, respectively 80%, 71.4% and 23.8% **(Fig 1).**

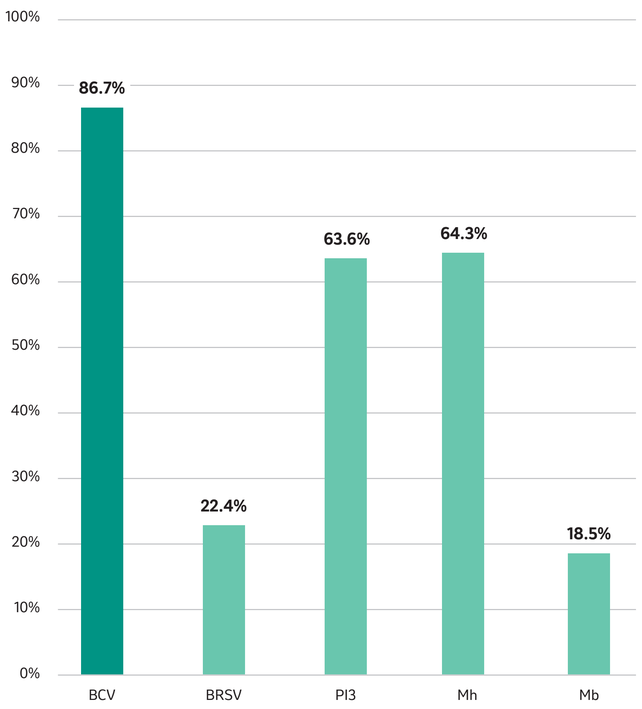
**FIGURE 1.** Herd level seroprevalence of the main BRD pathogens on Dutch dairy BRD problem farms.




## RESULTS

- 273 of the 315 calves tested (86.7%) had antibodies against BCoV. The calf level seroprevalence for BRSV was 22.4% compared to 63.6%, 64.3% and 18.5% for PI3, Mh and Mb, respectively **(Fig 2).**

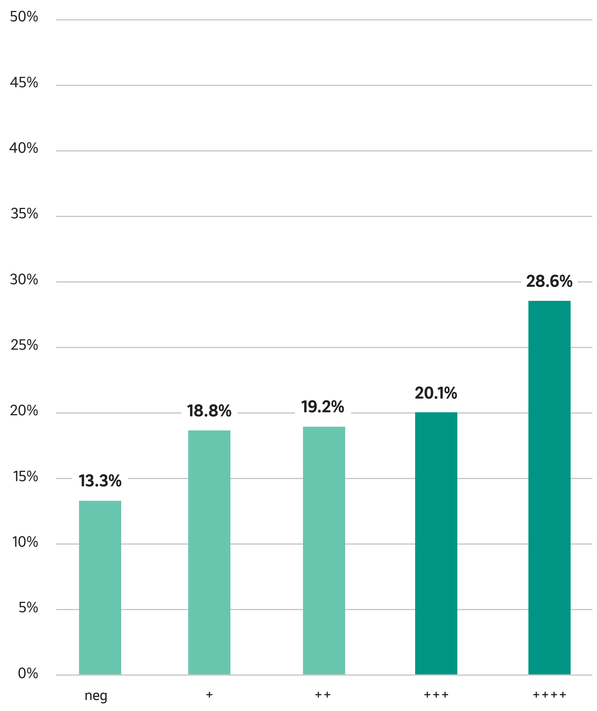
**FIGURE 2.** Calf level seroprevalence of the main BRD pathogens on Dutch dairy BRD problem farms.




## RESULTS

- Nearly half (48.7%) of the calves seropositive for BCoV had a high to very high titer in antibodies, indicating a possible recent BCV infection **(Fig 3).**

**FIGURE 3.** Semi-quantitative BCoV serum titers in calves on Dutch dairy BRD problem farms.

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