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Virus detection in Culicoides biting midges during the BTV-3 outbreak in north-west Germany 2024

Inhalt

Bluetongue virus (BTV), Schmallenberg virus (SBV) and epizootic haemorrhagic disease virus (EHDV) are arthropod-borne viruses transmitted by biting midges and primarily affect domestic and wild ruminants. In Central Europe, the importance of biting midges as vectors increased after the emergence of BTV-8 in 2006 and SBV in 2011. Furthermore, in 2022, EHDV was detected for the first time in southern European regions. Outbreaks of BTV, SBV, or EHDV in livestock populations may cause animal suffering and economic losses due to management and control measures such as vaccination and trade restrictions. The aim of this study was to monitor the viruses present in the biting midge population during the severe outbreak of BTV serotype 3 in Germany. Biting midges were caught from April to September 2024 on 14 farms in north-west Germany. Of the trapped midges, 337,359 females were selected and sorted into 7,549 pools, with up to 50 individuals per pool. The pools were tested by PCRs for the genomes of SBV, BTV and EHDV. BTV-RNA was detected in a total of 1,359 pools (18.0%) and SBV-RNA in 402 pools (5.3%). None of the tested pools was positive for EHDV. In this study, we confirmed the ongoing circulation of SBV, as well as an extensive BTV circulation in the Culicoides fauna in north-west Germany in 2024. Both viruses were first detected in the biting midges in early summer and reached their highest levels in August.

Keywords

bluetongue virus, Schmallenberg virus, Culicoides, biting midges, monitoring study

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Yes, I am a Junior Scientist.

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