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Schmallenberg virus and bluetongue virus in biting midges: observations in the field

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Schmallenberg virus (SBV) and bluetongue virus (BTV) are transmitted by Culicoides biting midges and affect ruminants. SBV was first found in Germany in 2011 and has today reached an enzootic status in central Europe. In 2006 BTV was introduced in central Europe and several serotypes has emerged ever since. In 2023 BTV-3 was detected for the first time in the Netherlands, rapidly spread to neighboring countries and caused a severe outbreak in Germany in 2024. The monitoring of viruses in the midges is of veterinary importance because the resulting diseases cause animal suffering and economic losses due to management and control measures.

To investigate the prevalence of the viruses in the vectors, altogether 810,237 biting midges were caught from 2019 to 2024 at 86 sites in Germany, grouped in 26,065 pools and were tested by PCRs for the genomes of SBV and BTV. SBV was detected every year in the biting midges and 4.9% of all pools were positive. While no BTV was found from 2019 to 2022, 0.02% of the pools were positive in 2023 and 7.4% in 2024, which corresponds to the reported BTV-3 cases in Germany. The most positive pools were sampled from August to October. No virus genome was found in the midges caught from December to March. The risk of virus transmission through biting midges seems to be elevated in summer and early autumn. Climate change with rising temperatures and mild winters could increase the risk of virus transmission in the spring and even the winter months.

Keywords

bluetongue, biting midges, Culicoides, monitoring

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Yes, I am a Junior Scientist.

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