



V 19 Facing bad weather: How do ticks and tick-borne pathogens take up the challenge?

Gern Lise

Laboratory of Eco-Epidemiology of Parasites, Institute of Biology, University of Neuchâtel, Switzerland

Tick-borne zoonoses are maintained in nature through 3 obligatory elements: the tick, the host, and the pathogen. Each of them has interactions with each other on the level of the organisms or the molecules. Ticks and hosts also have interactions with their external environment.

Ixodes ricinus ticks are very sensitive to desiccation, and they are very often facing weather conditions that are unfavourable for them. Weather conditions not only influence tick development, but also tick survival, tick behaviour, and host encounter. Ticks and tick-borne pathogens use different strategies to face bad weather. Microclimatic conditions may influence TBE virus and Lyme borreliosis spirochaete circulations in endemic areas. Weather conditions prevailing in an area may even have an effect on genetic diversity of pathogens in this area.

Recent studies reported that infection by various tick-borne pathogens helps ticks to survive deleterious weather conditions. This last example shows how both ticks and microorganisms are taking advantages from each other. This mutualism may have accompanied the whole evolution of these microorganisms together with their tick vectors.