

Abstract:

The general principles in pathogen transmission by insects involve a complex and specific interplay, in this case between thrips, tospovirus and their shared host plant, which has led to outbreaks of crop disease epidemics of economic and social importance. The possible processes and factors driving their co-evolution were partly studied by rearing *Frankliniella occidentalis* [western flower thrips (WFT)] on either tomato spotted wilt virus (TSWV)-infected or uninfected *Capsicum annuum* leaflets throughout their larval stages. Later, pupae were transferred individually on healthy leaf discs for further studies of the influence of TSWV on WFT development and behavioural patterns. The exposure of WFT to TSWV was found to improve performance with regard to longevity and survival, with mean longevity being significantly higher in TSWV-exposed WFT compared to unexposed ones ($F(3,403) = 22.44, P < 0.0001$). The observed improvement in survival was as a result of significant reduction in mortality for the WFT individuals exposed to TSWV ($F(3,383) = 849.94, P < 0.0001$) compared to the unexposed. However, the results showed a significant reduction in mean daily fecundity overtime ($F(10,10) = 246.66, P < 0.0001$) and across the four treatments ($F(3,30) = 6.62, P = 0.001$), as well as lifetime fecundity ($F(3,23) = 21.23, P < 0.0001$) of the WFT exposed to TSWV compared to the unexposed reared on uninfected leaf discs. For preferential test, *C. annuum* leaf discs infected with TSWV were more attractive to WFT as compared to healthy leaf discs ($\chi^2(4, 34) = 112.35, P < 0.0001$). These results are envisaged to contribute to a clear understanding into the plant-vector-virus interaction, which is essential for accurate diagnosis and control of the TSWV epidemic, as well as the control of *F. occidentalis* as crop pest.