

Intraspecific variation for host immune activation by an arthropod herbivore

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Abstract

Many parasites can interfere with their host's defences to maximize their fitness. Here we investigated if there is heritable variation in the spider mite, *Tetranychus evansi* for traits associated with how they interact with their host plant. We also determined if this variation correlates with mite fecundity. This mite has the ability to interfere with jasmonate (JA) defences which is the main determinant of anti-herbivore immunity in plants. We investigated (i). variation in fecundity in the presence and absence of JA defences, making use of a wild-type tomato cultivar and a JA-deficient mutant (*defenseless-1*), and (ii) variation in the induction of JA defences, in 4 *T. evansi* field populations and in 59 inbred lines created from an outbred population conceived from controlled crosses of the four field populations. We observed a strong positive genetic correlation between fecundity in the presence (on WT) and in the absence of JA-defenses (on *def-1*). However, fecundity did not correlate with the magnitude of induced JA-defenses in WT plants. Our results suggest that JA-defences have a minimal impact on the performance of the specialist *T. evansi*, either because all lines can adequately reduce levels of defences, or because they are resistant to such defences.

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