

Characterization of Biotype T of *Bemisia tabaci* Associated with *Euphorbia characias* in Sicily

Stefano Demichelis,¹ Claudio Arnò,^{†,1} Domenico Bosco,¹
Daniele Marian² and Piero Caciagli^{2,*}

The T biotype of *Bemisia tabaci* (Gennadius, 1889), a population found colonizing *Euphorbia characias* L. plants on the Nebrodi-Peloritani mountains in Sicily, was biologically characterized. The minimum development time was 29.7 days at 28°C. Based on the regression of 1/day vs T, the rate of development was calculated as 0.00206, the theoretical lower temperature threshold for development as 9.3°C, and the sum of effective temperatures as 485.1. At 25°C, egg-to-adult development was significantly shorter on *Datura stramonium* (30.1 days) than on either *Euphorbia pulcherrima* or *Euphorbia characias* (35.6 and 35.4 days, respectively). The fourth instar nymphs grown on *D. stramonium* had the typical oval outline and seven pairs of dorsal setae located on cone-like processes, often barely visible. The fourth instar nymphs and their pupal cases grown on *E. characias* had the outline deformed by the presence of hairs on the lower surface of the leaf. The pupae on *D. stramonium* were significantly larger (both longer and wider) than those reared on *E. characias*; on both host plants, female pupae were significantly larger than male ones. Analysis of variance showed that width of females on *D. stramonium* was significantly larger than the width of those reared on *E. characias*. Attempts at courtship between T- and Q-biotypes were observed, but adults from different biotypes were never seen mating. Only males were obtained from the seven heterologous crossing attempts, either way, whereas homologous, control breeding produced males and females. The T biotype was able to transmit *Tomato yellow leaf curl Sardinia begomovirus* (TYLCSV) from *D. stramonium* to *D. stramonium*, from tomato to tomato and from tomato to *D. stramonium*. Attempts to transmit TYLCSV from *D. stramonium* to tomato were unsuccessful. The transmission efficiency was significantly lower when tomato was the test plant. The diverse biology and ecology of the T biotype confirm that it is genetically different from most Mediterranean biotypes.

KEY WORDS: *Bemisia tabaci* biotype T; *Euphorbia*; whitefly; Sicily; virus vector; geminivirus.[†]

Received Sept. 14, 2004; accepted Dec. 23, 2004; <http://www.phytoparasitica.org> posting March 10, 2005.

¹DiVaPRA, Entomologia e Zoologia applicate all' Ambiente, Università degli studi di Torino, Grugliasco, Italy.

²Istituto di Virologia Vegetale, CNR, Torino, Italy. *Corresponding author [Fax: +39-011-343809; e-mail: p.caciagli@ivv.cnr.it].

[†]This paper is dedicated to the dear memory of our colleague Dr Claudio Arnò, who died on March 12, 2004, while this paper was being written.