

HOST-PLANT DETERMINES THE PHYTOPLASMA ACQUISITION AND TRANSMISSION COMPETENCE BY LEAFHOPPER VECTORS

Domenico Bosco¹; Luciana Galetto²; Cristina Marzachi².

¹*Università degli Studi di Torino, DI.VA.P.R.A. – Entomologia e Zoologia applicate all'Ambiente, Via L. da Vinci, 44 - 10095 Grugliasco (Italy); domenico.bosco@unito.it*

²*Istituto di Virologia Vegetale, Consiglio Nazionale delle Ricerche, Strada delle Cacce, 73 – 10173 Torino (Italy).*

Phytoplasmas are wall-less bacteria transmitted by hemipteran vectors in a persistent, propagative manner. Insect feeding preferences have a major role in transmission specificity. Vector insects can be polyphagous, oligophagous or strictly monophagous according to their ability to feed and reproduce on many, few or one host plant, respectively. Similarly, phytoplasmas may be generalists, infecting several different plant species, or specialists, infecting one or a few related plant species. We report on the differential capabilities of leafhopper vectors to acquire and transmit two phytoplasma strains (Chrysanthemum Yellows, CYP, “*Candidatus Phytoplasma asteris*”) and (Flavescence dorée, FDP, “*Ca. P. vitis*”), following feeding on different plant species. Acquisition and transmission efficiencies of CYP by *Macrostelus quadripunctulatus*, *Euscelidius variegatus*, and *Euscelis incisus* vary dramatically according to the host-plant. Similarly, *Scaphoideus titanus* acquires FD with higher efficiency when feeding on broad bean compared to grapevine, its natural host-plant. A comparative analysis of CYP transmission competence by *Empoasca decipiens* and *E. variegatus* on daisy and broad bean plants also provides evidences of the role of the host-plant in phytoplasma transmission. A different feeding behavior of vectors on different host-plants and/or different phytoplasma titers in different plant species can explain the influence of host-plant species in phytoplasma transmission. We discuss relationships between vector transmission efficiency and phytoplasma titer in the source plant (as determined by quantitative real time PCR assays) in daisy, broad bean and two different grapevine varieties, Barbera and Nebbiolo.