

Evaluation of olive cultivar effect on the efficiency of the acquisition and transmission of *Xylella fastidiosa* by *Philaenus spumarius* (Hemiptera: Aphrophoridae)

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The meadow spittlebug *Philaenus spumarius* (L.) has been identified as vector of *Xylella fastidiosa* subsp. pauca strain CoDiRO infecting several host plants in Apulia (Southern Italy), and causing a major bacterial disease on olive trees. Evidences of differential olive cultivar susceptibility to the bacterial infections were obtained from phenotypic characterization and molecular investigations. A higher bacterial population (up to 100 times) was consistently detected in the trees of the most susceptible cultivars (i.e. Ogliarola and Cellina di Nardò, showing severe symptoms), compared to the trees of the cultivar Leccino showing milder symptoms and erratic distribution of the bacterium within the canopy. In order to determine the epidemiological impact of olive trees harboring low bacterial population, transmission experiments were set under semi-field conditions, by caging Xf-free adults of *P. spumarius* on branches of field-infected trees of the abovementioned cultivars. Three independent transmission tests were carried out from June to September 2016. Insects were caged on the branches of the infected trees for 3-4 days of acquisition and then transferred (groups of five) on healthy olive plantlets for 3-4 days of inoculation access period. Quantitative PCR assays performed on the insects used in the transmissions tests showed that: (i) *P. spumarius* did not acquire Xf on the majority of the Leccino branches, and only on few branches 5-7% of positive insects could be detected; (ii) infected specimens were consistently detected upon feeding on the branches of Ogliarola and Cellina di Nardò, with an average of 47% of *Xylella*-positive insects. With regard to the transmission rate, the diagnostic assays on the recipient plants, so far, showed 20% and 35% of infected plants when exposed to the insects that fed on Cellina di Nardò and Ogliarola, respectively, while no transmission occurred on the olives exposed to the insects fed on trees of Leccino.