Impact of low susceptible and resistant host plants on the transmission of *Xylella fastidiosa* subsp. pauca ST53 by *Philaenus spumarius* (Hemiptera: Aphrophoridae)

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In the context of the severe epidemic spread of *Xylella fastidiosa* subsp. pauca ST53 (Xfp) in the Apulia Region (southern Italy), there is a need to urgently rethink cropping system for restoring agricultural productions and landscapes. Efforts are devoted to identifying species immune to Xfp (as alternative crops), and to assess the impact of host species showing low susceptibility/resistance to the infections. To this end, we performed transmission experiments from olives and almond, to assess vector acquisition and transmission from host plants showing different susceptibility and low bacterial population size (<105 CFU/ml). We compared vector acquisition/transmission using susceptible and resistant olive cultivars as source of the bacterium: "Cellina di Nardò" (highly susceptible), "Kalamata" (susceptible), "Leccino" and "FS17" (resistant). We also included in the experiments almond trees, characterized by low prevalence and impact of Xfp-infections. Acquisition was done by caging 50-100 Xfp-free specimens of Philaenus spumarius on branches selected on field grown trees. After 3-4 days of acquisition, insects were transferred on healthy olive and periwinkle plants. Molecular diagnostic tests clearly showed differential acquisition rates (% of positive insects) according to the source plants: 21.7% for "Cellina di Nardò", 8.9% for "Kalamata", <1.8% for "Leccino" and "FS17", and 2.5% for almond. Transmission rates to olive seedlings positively correlated with the acquisition: 18.6% with insects recovered from "Cellina di Nardò", 7.0% from "Kalamata", 1.2% from "FS17", 3.4% on almond, while no transmission was recorded when insects were caged on "Leccino". Using recipient periwinkle plants, the transmission rates were: 26% with insects from "Cellina di Nardò", 5% from "Kalamata", while no transmission occurred with insects fed on "Leccino", "FS17" and almond. These data suggest that replacement of high susceptible crops with host plants harboring limited bacterial population size may substantially contribute to suppress the spread rate and the impact of the disease in the infected areas.