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Study of plant growth conditions influencing *Xylella fastidiosa* disease in different plant species

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Abstract: We have studied the environmental conditions that have a role in regulating *X. fastidiosa*-induced diseases and host range. First, we report on a 5-year experiment in which four different plant species (*Quercus petraea*, *Prunus domestica*, *Vitis vinifera*, *Salix alba*) have been inoculated with a set of Xf strains, and are growing in insect-proof tunnels under Belgian climatic conditions. In *Vitis vinifera*, important spread of *X. fastidiosa* subsp. *fastidiosa* was already scored after 6 months, without expressing disease. All detection tests are repeated twice yearly. Preconditioning of *X. fastidiosa* cells for successful inoculation are also discussed. Second, we study plant growth conditions that change the chemistry of xylem sap, which is then extracted and used as the test medium for *X. fastidiosa* growth and expression of pathogenesis-related features. Two divergent conditions of temperature, water availability and fertilization, and their combinations, were installed in greenhouses to grow *Vitis vinifera*, *Nerium oleander* and *Salix alba*. After six months, xylem fluid was collected from all variables and this will be repeated for three years. These xylem sap samples are then inoculated with the relevant *X. fastidiosa* strains. We report on the *X. fastidiosa* behavior in these variable xylem conditions, such as growth forms (planktonic cells, aggregates, biofilms) and expression of cell wall-degrading activities. These data are then correlated with the xylem chemistry (pH, several organic and inorganic compounds) and the differential plant growth conditions

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A global database on the host plants of *Xylella* spp.

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