

Determination of the parameters for a day-degree method to predict the flight of host populations of *Hyalesthes obsoletus*

M. Maixner

Julius Kühn-Institut, Institute for Plant Protection in Fruit Crops and Viticulture, 54470 Bernkastel-Kues, Germany; Michael.Maixner@jki.bund.de

Hyalesthes obsoletus the vector of bois noir (BN) is a univoltine planthopper. Like many Cixiidae species the immature stages of this insect live in the soil where they feed on the roots of herbaceous plant hosts. Nymphs hibernate in deeper soil levels. When they move back to the surface in spring they come under the influence of air temperature. Since growth and development of insects are significantly influenced by temperature, the time of emergence of adult vectors depends on accumulated heat units. A preliminary phenology model for *H. obsoletus* populations on *Convolvulus arvensis* (bindweed) based on degree days has been developed by Maixner & Langer (IOBC/wprs Bulletin, 29, 161-166. 2006). Since the flight of adult *H. obsoletus* from populations on *Urtica dioica* (stinging nettle) is delayed compared to bindweed populations, the model required an adaptation for nettle populations. An inverse modelling approach was used to determine the most appropriate parameters (starting date, threshold temperature, required degree-days) for a degree-day calculation of the start of flight activity of both populations, based on weather data and field observations of adult flight from different years and locations. The estimated parameter sets allow already a rather exact prediction of the flight activity of adult *H. obsoletus*, although additional field data will help to improve the accuracy. The precise information on the flight activity is useful for both, an optimal monitoring of the presence, infestation and activity of this vector, and the proper timing of weed control activities in order to avoid an increased flight of infective vectors from their natural host plants to grapevine or other susceptible crops.