

# Book of Abstracts



Università  
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**SESSION V**

**AGRICULTURAL ENTOMOLOGY**

**A physiologically-based population model for the phenology of *Philaenus spumarius***

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The meadow spittlebug, *Philaenus spumarius* L. (1758) (Hemiptera: Aphrophoridae), is the main vector of the plant pathogen bacterium *Xylella fastidiosa* (*Xf*) in Europe. *Xf* is the causal agent of the severe disease of olive quick decline syndrome (OQDS) in Apulia. Uprooting infected plants and control of the vectors are the pillars of the containment strategies of this devastating disease. The main objective of vector control is to prevent colonization of olive canopy by newly-emerged adults. Therefore, IPM strategy focuses on suppressing juveniles in the herbaceous cover and protecting olive trees from surviving adults. In this frame, the development of accurate tools to describe and predict the phenology of *P. spumarius* populations in agroecosystems is fundamental to support rational decision-making. A properly calibrated phenological model allows management actions to be planned correctly, greatly increasing their effectiveness and reducing both the costs of implementation and the resulting environmental impacts.

We developed a temperature-driven physiological-based model to predict the phenology of *P. spumarius*. We estimated the parameters of bio-demographic functions used in the population model describing the processes of diapause termination and age-distribution of overwintering individuals, and the temperature-dependent development and mortality rates by integrating lab experiments and literature evidence. The model has been calibrated and validated with field data collected in the Liguria and Apulia regions (Northern and Southern Italy, respectively).

The model can be used for proper design and implementation of Integrated Pest Management strategies to control *P. spumarius* populations and thus support *Xf* containment.

**KEY WORDS:** Meadow spittlebug, *Xylella fastidiosa*, Physiologically-based model, Integrated Pest Management, Pest phenology.