

New methods for the rational and sustainable management of *Popillia japonica* - The GESPO Project

G. Sperandio¹, A. Simonetto¹, M. Colturato¹, A. Battisti², N. Mori³, G. Santoiemma², B. Cavagna⁴, M. Ciampitti⁴, A. Bianchi⁴, G. Gilioli¹

¹University of Brescia, DMMT, Italy; ²University of Padova, DAFNAE, Italy; ³University of Verona, Department of Biotechnology, Italy; ⁴Lombardy Region, Plant Protection Service, Italy

The invasive Japanese beetle (*Popillia japonica* Newman) is a highly polyphagous agricultural pest originated from north-eastern Asia. The larval trophic activity may impact the root system of various graminaceous plants while adults may cause damage to leaves, flowers and fruits of cultivated and spontaneous plants. More than 100 economically valuable plant species have been reported as potential hosts including among others, maize, soybean, grapevine, apple, peach and kiwifruit. In 2014 *P. japonica* was detected, for the first time in Continental Europe, in the Ticino Valley on the border between Lombardy and Piedmont regions (Italy). Since then, the National and the two Regional Phytosanitary Services have adopted a set of measures aimed at monitoring and managing *P. japonica*.

The GESPO Project, funded by the Lombardy Region, aims at developing rational (cost-efficient) and sustainable (low impacts) solutions for the integrated management of *P. japonica*. In particular we aim at: i) exploring the influence of biotic and abiotic drivers on the species' life-history strategies (development, survival and fertility), ii) investigating the environmental factors influencing the suitability of the habitat for the species, iii) developing rational and cost-efficient protocols for the management of the species and iv) developing models describing the species' phenology, spread and impacts. The main results of the field experiments and the main outputs of the models will be provided to relevant stakeholders through a web-based tool that will support the implementation of knowledge-based management strategies against *P. japonica*. We present the overall framework of the Project and the results achieved.

Funding: The Project GESPO is funded by "Direzione Generale Agricoltura - Regione Lombardia - D.d.s. 28 marzo 2018 - n. 4403D.g.r. n. X/7353 14 novembre 2017".

Keywords: *Popillia japonica*, invasive species, integrated pest management