

Special issue on *Drosophila suzukii*: from global invasion to sustainable control

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In the era of globalization, invasive pests are gaining increasing economic and ecological importance (Hulme 2009). Arthropods play a pivotal role as invading pests, threatening the productivity of a multiplicity of the agricultural systems worldwide. Journal of Pest Science devotes specific attention to this important topic: several recently published papers deal with the biology, ecology, and sustainable control of invasive pests including, among others, spider mites *Tetranychus* spp. (Attia et al. 2013; Chen and Dai 2015), the brown marmorated stink bug *Halyomorpha halys* (Cesari et al. 2015; Haye et al. 2015), the tomato leafminer *Tuta absoluta* (Desneux et al. 2010; 2011; Zappalà et al. 2013; Van Damme et al. 2015), and the Mediterranean fruit fly *Ceratitis capitata* (Manoukis and Hoffman 2014; Rogers et al. 2014).

The Spotted Wing Drosophila (SWD), *Drosophila suzukii* (Diptera: Drosophilidae), currently belongs to the most important invasive pestiferous species. This vinegar fly is native to Eastern Asia and has recently expanded its range to Europe and in the Americas, making it a global threat. Unlike other vinegar flies, SWD is able to oviposit and develop in unwounded ripening soft fruits of a wide range of wild and cultivated plants (Fig. 1). Aside from

being a pest of great economic importance, SWD is closely related to *Drosophila melanogaster*, a premier model organism in experimental biology. As a consequence, the broad knowledge gained through studying *D. melanogaster* is being gradually transferred to SWD, making the control of this pest holistic and innovative.

In 2015, Journal of Pest Science published a seminal review by Asplen and colleagues, a team of authors belonging to nine countries from three continents, demonstrating the global importance of this pest (Asplen et al. 2015). This paper illustrates the main bio-ecological features of the pest, its invasion history, and provides directions for future research to establish forthcoming sustainable control tactics. Here, in this special issue, seventeen original research and four review articles complement and deepen the review by Asplen et al. (2015). The review papers furnish the current knowledge on the response of *D. suzukii* to abiotic and biotic environmental conditions (Hamby et al. 2016), the interactions of *D. suzukii* with microbes and the potential for microbial-based control of the pest (Hamby and Becher 2016), the utility of genomic techniques for improving management practices targeting *D. suzukii* (Murphy et al. 2016), and an overview of the current IPM tactics to control SWD in different regions around the world (Haye et al. 2016). The original articles present a variety of new findings on the biology and populations dynamics of SWD, its chemical and trophic ecology, as well as a range of novel control tactics including molecular and biological control agents such as parasitoids.

The present SWD special issue also represents the consequential development of Journal of Pest Science as an outlet for outstanding and timely works concerning major topics in the control of insect pests. Hence, we are thankful to numerous experts on *D. suzukii* who responded to our

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Fig. 1 *Drosophila suzukii* female ovipositing on a cherry fruit. Photo credit: Tim Haye

invitation to contribute to this special issue or submitted spontaneously their work for publication. All manuscripts submitted were processed through the peer-review system of the journal, and we wish to thank the volunteer reviewers who considerably helped the editors in selecting the best contributions which now populate this special issue on the Spotted Wing *Drosophila*: from global invasion to sustainable control.

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