

Special issue on the brown marmorated stink bug, *Halyomorpha halys*: an emerging pest of global concern

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The brown marmorated stink bug (BMSB), *Halyomorpha halys* (Hemiptera: Pentatomidae), has emerged as a very damaging invasive insect pest in North America and Europe in the 1990s and 2000s, respectively. Native to eastern Asia, this highly polyphagous pentatomid (>120 different host plants) is spreading rapidly worldwide, notably through human-mediated activities (Haye et al. 2015a). Damage is caused by feeding of the adults and nymphs on fruits, buds, leaves and stems of their host plants (Fig. 1), which include many economically important field and tree crops, vegetables, ornamentals, herbaceous perennials, shrubs and forest trees (Lee et al. 2013). In the mid-Atlantic region of the USA, *H. halys* has become one of the most significant pests in apple production, causing >\$37 million in losses in 2010 (United States Apple Association 2010). In recently invaded areas in Europe and Eurasia, including northern Italy and western Georgia, severe damage has been observed especially in pear and hazelnut orchards. The development of large pest populations outside its native range has recently generated secondary invasions within Europe and North America, accelerating the global spread of this insect (Garipey et al. 2013, 2015), most recently to Chile (Faúndez and Rider 2017). Aside from being a severe agricultural and horticultural pest, BMSB has become well known as a nuisance pest, as adults often invade human-made structures to overwinter inside protected environments (Inkley 2012).

In 2014, *Journal of Pest Science* published the first papers on the biology, genetic diversity and pathways of this invasive insect in Europe (Garipey et al. 2013; Haye et al. 2014), followed by a series of papers on its flight capacity, the response of European parasitoids to the invader, new introductions in Europe, and the development of attract-and-kill strategies (Cesari et al. 2015; Garipey et al. 2015; Haye et al. 2015b; Wiman et al. 2015; Martinson et al. 2015; Morrison et al. 2016). Haye et al. (2015a) called attention to the increasing economic threat to field, fruit and vegetable crops worldwide, suggesting that more coordinated actions are needed to slow its spread and mitigate negative effects in invaded areas.

Here, in this special issue, three review articles summarize the current knowledge on the discoveries and applications in chemical ecology of *H. halys* (Weber et al. 2017), the chemical control options in the USA (Kuhar and Kamminga 2017) and biological control by native parasitoids and predators (Abram et al. 2017). The 23 original research articles by scientists from Europe, China, Australia, New Zealand and North America report new insights into the potential global distribution, bug response to semiochemicals and vibrational signals, interaction with microbial symbionts, behavioral and population response of natural enemies, management using pesticides, including organic materials, as well as trap crops, monitoring, and development of action thresholds for pest populations.

We thank numerous experts on *H. halys* around the world for their contributions. All manuscripts submitted were processed through the peer-reviewed system of the journal, and we are very grateful to the volunteer reviewers who very much helped the editors in selecting and refining the best contributions, which now populate this special issue on the brown marmorated stink bug: an emerging pest of global concern.

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Fig. 1 *Halyomorpha halys* adult feeding on a green bean. Photograph credit: Tim Haye. (Color figure online)

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