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Book of Abstracts

Performance of two egg parasitoid species from Zambia and four indigenous Trichogramma species from northeastern China against fall armyworm, Spodoptera frugiperda

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Abstract: Fall armyworm Spodoptera frugiperda (Smith) (Lepidoptera: Noctuidae), is a new invasive pest causing serious damages in Asia and Africa. Trichogramma are the dominant biological control agents that has been applied to control lepidopteran pests worldwide. To prevent the outbreak of invasive S. frugiperda in China, performance of the two egg parasitoids collected from Zambia and four native species of Trichogramma egg parasitoids from northeastern China were studied. The two egg parasitoids from Zambia were identified as Trichogramma sp. nr. mwanzai and Trichogrammatoidea sp. by using combination of both molecular and morphological characters. The results showed that both parasitoid species from Zambia significantly preferred to 1-day-old age eggs of S. frugiperda. These two imported parasitoid species can be massively reproduced on Corcyra cephalonica eggs. In native species, all four Trichogramma species could accept S. frugiperda eggs and complete development successfully, but significant differences in fitness parameters were found among them. The parasitism of T. dendrolimi, T. ostriniae and T. leucaniae was higher than 80% on S. frugiperda egg masses, while only T. dendrolimi females offered to S. frugiperda eggs parasitized higher number of eggs among all the tested species. Finally, the performance of two parasitoid species from Zambia and four native Trichogramma species on S. frugiperda eggs were compared. The present study provides useful information on mass breeding and releases of indigenous egg parasitoids against the invading S. frugiperda in Africa and China in future.

Recent advances toward the sustainable Nesidiocoris tenuis exploitation in tomato crops

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Abstract: Generalist predators are often highly efficient biocontrol agents of various crop pests. Besides, they can also feed on various non-pest foods. The zoophytophagous mirid bug Nesidiocoris tenuis (Reuter) (Hemiptera: Miridae) is largely employed in biocontrol programs in tomato crops in Euroafroasia through augmentative releases and conservative strategies. Under certain circumstances, it can cause economic losses by its repeated feeding on tomato plants. Here we report recent experimentations on various aspects of potential N. tenuis exploitation in tomato crops, such as banker plants, variety susceptibility, induced plant defenses, insecticide selectivity. The results of our recent experiments provide new insight useful for optimizing Integrated Pest Management tomato packages.

BugMap: understanding the expansion of Halyomorpha halys with the support of citizens

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Abstract: Tracking the invasion of alien species requires the rapid gathering of a vast amount of data, a goal that can be achieved with the coordinated work of researchers and citizens. In this context, the application of citizen science programs to the monitoring of alien species is becoming particularly popular, although its efficacy should be object of more accurate evaluation through specifically designed experiments. BugMap is a smartphone app specifically designed to track the expansion of Halyomorpha halys, the brown marmorated stink bug (BMSB) in Trentino, Northern Italy. In the present study, we compare the BMSB distribution provided by data obtained with standard monitoring methods (i.e. attractive traps, visual sampling) and BugMap, in terms of time and spatial coverage.
From 2016, BugMap collected more than 3000 records, thanks to the contribution of technicians, farmers and citizens. The photographic validation associated with BugMap showed good accuracy since the vast majority of the records targeted the correct stink bug species. The heat maps generated with these records showed a reliable evolution of the areas with higher concentration of BMSB with time, coherent with the data obtained with the traditional monitoring. Furthermore, BugMap data has proved to be particularly useful to monitor both the BMSB phenology (e.g., first appearance of nymphs and eggs) and presence in different environments (e.g., cultivated areas, woods, parks), throughout the year. Our conclusion is that the real time information provided by BugMap could be employed as an instrument for timely decision-making and to support IPM strategies.