World Academy of Science, Engineering and Technology
International Journal of Bioengineering and Life Sciences
Vol:11, No:10, 2017

Spatial Distribution of Virus-Transmitting Aphids of Plants in Al Bahah Province, Saudi Arabia

Authors : Sabir Hussain, Muhammad Naeem, Yousif Aldryhim, Susan E. Halbert, Qingjun Wu

Abstract : Plant viruses annually cause severe economic losses in crop production and globally, different aphid species are responsible for the transmission of such viruses. Additionally, aphids are also serious pests of trees, and agricultural crops. Al Bahah Province, Kingdom of Saudi Arabia (KSA) has a high native and introduced plant species with a temperate climate that provides ample habitats for aphids. In this study, we surveyed virus-transmitting aphids from the Province to highlight their spatial distributions and hot spot areas for their target control strategies. During our fifteen month's survey in Al Bahah Province, three hundred and seventy samples of aphids were collected using both beating sheets and yellow water pan traps. Consequently, fifty-four aphid species representing 30 genera belonging to four families were recorded from Al Bahah Province. Alarmingly, 35 aphid species from our records are virus transmitting species. The most common virus transmitting aphid species based on number of collecting samples, were Macrosiphum euphorbiae (Thomas, 1878), Brachycaudus rumexicolens (Patch, 1917), Uroleucon sonchi (Linnaeus, 1767), Brachycaudus helichrysi (Kaltenbach, 1843), and Myzus persicae (Sulzer, 1776). The numbers of samples for the forementioned species were 66, 24, 23, 22, and 20, respectively. The widest range of plant hosts were found for M. euphorbiae (39 plant species), B. helichrysi (12 plant species), M. persicae (12 plant species), B. rumexicolens (10 plant species), and U. sonchi (9 plant species). The hottest spot areas were found in Al-Baha, Al Mekhwah and Biljarashi cities of the province on the basis of their abundance. This study indicated that Al Bahah Province has relatively rich aphid diversity due to the relatively high plant diversity in a favorable climatic condition. ArcGIS tools can be helpful for biologists to implement the target control strategies against these pests in the integrated pest management, and ultimately to save money and time.

Keywords : Al Bahah province, aphid-virus interaction, biodiversity, global information system
Conference Title : ICE 2017 : International Conference on Entomology
Conference Location : Paris, France
Conference Dates : October 19-20, 2017