A field study was conducted to determine the impact of transgenic maize, event BT-X, expressing Cry1Ac protein, on biodiversity and abundance of non-target arthropods. The event BT-X was compared with near-isogenic conventional line. Paired fields of event BT-X and isogenic line were planted. Plant inspections, vacuum-suction machine, pitfall traps, and water pan traps exploited to sample the arthropod abundance and diversity of maize plant, aerial, and surface-dwelling communities. Shannon-winner index, Simpson index, and Pielou index were analysed to look for a general community level response between Bt and control maize lines. Analysis of variance was conducted on individual taxa to detect differences distinct from the primary community response. More than 210000 arthropods were enumerated, representing 170 taxonomic groups in 108 families, 19 orders and 6 classes. There were no significant difference between Bt maize and its isogenic control in Shannon-winner index, Simpson index and Pielou index of the arthropod communities. Abundance of most nontarget taxa, such as Propylea japonica, Leis axyridis (Pallas), Chrysoperla sinica Tjeder, Orius sp., Araneae, Delphacidae and thrips, exposed to Bt maize showed no significant differences compared with its isogenic control, and their seasonal dynamic were similarly. Results of the studies indicate that transgenic Bt maize expressing Cry1Ac protein does not produce adverse effects on nontarget arthropods occurring in the maize field.

Keywords: Bt maize, nontarget effects, Cry1Ac, arthropod