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Effect of Cabbage and Cauliflower Emitted Volatile Organic Compounds on Foraging Response of Plutella xylostella

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Abstract : The Diamondback Moth, Plutella xylostella (Linnaeus), is a major pest of cole crops that causes approximately 50% loss in global production. The utilization of inorganic pesticides is reflected in the development of resistance to this pest. Thus, there is a great need for an eco-friendly, sustainable strategy for the control of this pest. Although this pest, several natural enemies are reported worldwide, none of them can control it efficiently. Therefore, a proposed study is planned to understand the Volatile Organic Compounds (VOCs) mediated signaling interaction mechanism of the plant, pest, and natural enemy. For VOCs collection during different deployment stages of Cabbage POI, Green Ball, Pusa Cabbage, Cabbage Local, Snowball 16, Kanchan Plus, Pusa Meghna, Farm Sona Hybrid F1, and Samridhi F1 Hybrid, the Solid-phase microextraction (SPME) method was employed. Characterization of VOCs was conducted by Gas Chromatography-Mass Spectrometry (GC-MS). The impact of collected VOCs was assessed through Y-Tube Bioassays. The results indicate that the Cabbage variety Green Ball shows maximum repellency for P. xylostella (-100%). The cues present in this variety may be exploited for efficient management of P. xylostella in the cole crop ecosystem.

Keywords : Plutella xylostella, cole crops, volatile organic compounds, GC-MS, Green Ball
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