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Ecological Investigations for the Control of Aedes aegypti (Diptera: Culicidae) in the Selected Study Districts of Punjab, Pakistan

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Abstract : Aedes (Ae.) aegypti, the vector of pathogens of one health significance, has gained currency over the last decade. The present study reports the prevalence of A. aegypti larvae in indoor and outdoor niches from the three districts of different agro-geo-climatic zones of Punjab, including Chakwal (north), Faisalabad (central), and Dera Ghazi Khan (south). Mosquito larvae were collected, preserved, and transferred for identification. The relevant data were collected on a predesigned questionnaire. Stegomyia indices, including House Index (HI), Breteau Index (BI), and Container Index (CI), were calculated. The association of different breeding containers with the prevalence of Ae. aegypti larvae were estimated through Chi-square analysis. The highest Stegomyia indices were calculated in Chakwal (HI = 46.61%, BI = 91.67%, and CI = 15.28%) as compared to Faisalabad (HI = 34.11%, BI = 68.75% and, CI = 13.04%) and DG Khan (HI = 28.39%, BI = 68.23% and, CI = 11.29%), respectively. Irrespective of the geographical area, earthen jars, water tanks, and tree holes were found to be significantly associated ($p < 0.05$) with the abundance of Ae. aegypti larvae. However, tires and plastic bottles in Faisalabad and DG Khan while flower tubs and plastic buckets in Faisalabad and Chakwal were found to be significantly associated ($p < 0.05$) with the larval abundance. The results are a maiden attempt to correlate the magnitude of Ae. aegypti larvae in various microclimatic niches of Punjab, Pakistan, which might help in policy-making for preventive management of the menace.

Keywords : Aedes aegypti, ecology, breeding habitats, Stegomyia indices, breeding containers
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