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International Conference on
Zoology, Microbiology & Medical Parasitology
October 30-November 01, 2017 | Chicago, USA

Impact of rainfall on larval density of malaria vectors in district Baghpat, Uttar Pradesh

Bijendra Kumar, N Singh and **Ramesh C Dhiman**
HNB Garhwal University, Uttarakhand

Background & objective: Rainfall has been associated with mosquitoes breeding and abundance of population. It is an abiotic factor that affects the growth, development and survival of mosquito. The main objective of this study was to assess the impact of rainfall on larval density of malaria vectors in aquatic habitats.

Methods: Four study sites Katha, Khekra, Baragaon and main Baghpat were selected based on high malaria cases and availably of breeding habitats. Larval sampling was done by dipping method before and after rainfall within a period of 2-3 days. Larvae collected from the field, transported in plastic container and reared in the laboratory for adult emergence and identification. Adult mosquitoes were identified with the help of standard identification key under the dissecting microscope. The amount of rainfall (mm) was measured using a rain gauge, which was installed at Khekra study site of district Baghpat. The correlation analysis was applied for relationship between anopheline larval density and rainfall data (mm). Anopheles culicifacies and Anopheles stephensi dominant species of malaria vectors has been reported from selected localities of district Baghpat, Uttar Pradesh.

Result: We observed that rainfall of 45.6 mm significantly reduced larval density in both permanent and temporary habitats by 8.32 and 2.16 larval density/ dip respectively. Positive co-relation (r = 0.20), and (r = 0.31) was observed between rainfall and larval density after rainfall in permanent and temporary breeding habitats respectively.

Interpretation & conclusion: The adverse effect of rainfall on larval density could be attributed to flushing out of larvae from their breeding habitats. The critical amount of rainfall required for flushing out larvae was found to be 45.6mm. Anopheles culicifacies and Anopheles stephensi emerged from collected larvae.

Keywords: Malaria vectors, rainfall, larval density, habitat.

e: r.c.dhiman@gmail.com