

Distribution of mosquito larvae within the paddy and its implication in larvicidal application in Mwea rice irrigation scheme, Central Kenya.

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Source

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Abstract

Distribution of mosquito larvae in inundated rice fields is poorly known despite its profound implications in implementation of vector control programs. Based on oviposition behavior of gravid females and biotic and abiotic conditions of the rice field, distribution of mosquito larvae within the paddy may vary greatly. As a guide to implementation of mosquito vector control program targeting the aquatic stages in the rice fields in Mwea, studies were conducted to determine the distribution of mosquito larvae within the paddy. Twenty-eight cages measuring 50 cm³ were distributed randomly within the paddy during the transplanting stage of the rice growth cycle, and were examined twice per week up to the flowering stage to determine mosquito oviposition pattern. A total of 17,218 mosquito larvae were collected at the periphery and a further 17,570 at the center of the paddy. These comprised 7,461 larvae from the genus *Anopheles* and 27,327 from genus *Culex*. The number of pupae collected at the periphery was 1,004 and 1.5 times greater than the number collected at the center. Significantly higher counts of *Anopheles* larvae were collected at the center (1.00 +/- 0.11) than at the periphery (0.55 +/- 0.05) of the paddy during transplanting stage, but the difference was not significant during the tillering stage. In contrast, significantly higher numbers of *Culex* larvae were collected from the periphery (3.09 +/- 0.39) than at the center (2.81 +/- 0.24) of the paddy. More pupae were also collected at the center than at the periphery of the paddy. These findings indicate the distribution of *Anopheles* and *Culex* larvae in rice fields to be nonrandom; however, for successful achievement of an integrated vector control program targeting the diverse mosquito fauna occurring in rice fields, there is need to target the whole paddy for larvicidal application.