

EVALUATION OF BIO-RATIONAL LARVICIDES FOR THE CONTROL OF MOSQUITO LARVAE IN BANGLADESH

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Executive Summary

To control mosquito larvae with the application of bio-rational larvicides with minimal disruptive influence upon the ecosystem, the study was designed to determine the efficacy of several selected bio-rational larvicides against the larvae of mosquitoes in Bangladesh. Also, to compute the effective dosages (LC_{50}) of the tested larvicides. The work evaluated the efficacy of nine larvicides during September 2018 to February 2019 and the insecticides used in the experiment were; Spinosad, Emamectin benzoate, Pyrazin, Buprofezin, Cyfluthrin, Lambda Cyhalothrin, Temephos, Neem seed kernel, Neem leaf extract at different concentration. Doses of larvicides tested were; Spinosad (1, 2, 5 and 10 ppm), Cyfluthrin (1, 2, 5 and 10 ppm), Lambdacyhalothrin (1, 2, 5 and 10 ppm), Pyrazine (25, 40, 80 and 160 ppm), Emamectinbenzoate (25, 40, 80 and 160ppm), Buprofezin (5, 10, 20, 40 ppm) temephos (1, 2, 5 and 10 ppm) and two botanicals as neem leaf extract and neem seed kernel (1000, 2000, 5000 ppm). The experiment was laid out in CRD with three replications. Data were collected at 6, 12-, 18-, 24-, and 48-hours intervals. Numbers of dead and live larvae were recorded and a sample was set untreated. Probit analysis was done to find out the LC_{50} of each treatment. Among the nine larvicides lambda cyhalothrin gave the lowest median lethal concentration; (LC_{50} ; 0.00848), followed by Spinosad (LC_{50} ; 0.00433) after 48 hours. It was followed by temephos (LC_{50} ; 0.0139). Cyfluthrin (LC_{50} ; 0.684) Buprofezin (LC_{50} ; 2.223), Pyrazine (LC_{50} ; 6.070), Emamectin benzoate; (LC_{50} ; 7.5832). From the above experiment the toxicity of larvicides tested was revealed as; lambda-cyhalothrin > Spinosad > temephos > cyfluthrin > buprofezin > pyrazine > emamectin benzoate > neem seed kernel > neem leaf extract. Mortality percentage was also calculated to find out the efficacy of larvicides and Lambda cyhalothrin and temephos gave highest mortality percentage of 100% after 48 hours, which was followed by Spinosad (99%) Pyrazine(93.667%) Emamectin benzoate (92.110%), Buprofezin (91.667%), neem seed kernel(90.667%), neem leaf extract (87.33%) and Cyfluthrin (81.333%) mortality after 48 hours of treatment. From the above results the order of mortality percentage was lambda yhalothrin > temephos > Spinosad > pyrazine > emamectin benzoate > buprofezin > neem seed kernel > neem leaf extract > cyfluthrin. The work evaluated the effects of larvicides and recorded the mortality percent of larvicides.

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