

**OPTIMIZING COLONY REPRODUCTION PROCEDURES
FOR THE MASS REARING OF *ANOPHELES ARABIENSIS*
MOSQUITOES**

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ABSTRACT

Factors that may affect the mass rearing of *Anopheles arabiensis* mosquitoes for use in a Sterile Insect Technique (SIT) program were investigated. The effects of temperature on egg viability, pH on larval metamorphosis, release surface type on pupal eclosion success, and diet on fecundity, longevity and mating competitiveness were assessed. The work was conducted at the School of Biological Sciences, University of Nairobi. It was found that mosquito eggs maintained at 22-23°C were more viable than those incubated at 28-29°C ($p < 0.001$). The pH of the rearing media significantly influenced the mean pupation time of fourth larval instars (L4s) of the mosquitoes ($p < 0.001$). Eclosion success was significantly different between dry and wet surfaces ($p = 0.001$) but not between damp and wet surfaces ($p < 0.723$, damp and $p < 0.267$, wet). Mosquito larval diets upwardly influenced both mosquito size ($p < 0.001$) and fecundity ($p < 0.013$). Maize pollen when given in conjunction with mosquito larval diets had an upward effect on longevity; (0.83 ± 0.07) and (1.93 ± 0.05) and mosquito sizes; (0.03 ± 0.00) and (0.06 ± 0.00) for crushed *Rastrineobola argentea* fish and Tetramin[®] Baby fish food respectively. Mosquitoes raised on crushed *R. argentea* fish inseminated more females (78%) than those raised on Tetramin[®] Baby fish food (75%). In conclusion, it was demonstrated that: i) crushed *R. argentea* fish was efficacious as mosquito larval diet and ii) temperatures of the range 22-23 °C, micronutrients in conjunction with a pH of 6, wet and damp environmental surfaces, were found to be optimal for egg viability, mosquito culture and as pupae release surfaces respectively. It was also noted that maize pollen was important both as phagostimulant and larval diet for mosquitoes.