

Development of environmental tools for Anopheline larval control

Abstract:

Abstract Background Malaria mosquitoes spend a considerable part of their life in the aquatic stage, rendering them vulnerable to interventions directed to aquatic habitats. Recent successes of mosquito larval control have been reported using environmental and biological tools. Here, we report the effects of shading by plants and biological control agents on the development and survival of anopheline and culicine mosquito larvae in man-made natural habitats in western Kenya. Trials consisted of environmental manipulation using locally available plants, the introduction of predatory fish and/or the use of *Bacillus thuringiensis* var. *israelensis* (Bti) in various combinations. **Results** Man-made habitats provided with shade from different crop species produced significantly fewer larvae than those without shade especially for the malaria vector *Anopheles gambiae*. Larval control of the African malaria mosquito *An. gambiae* and other mosquito species was effective in habitats where both predatory fish and Bti were applied, than where the two biological control agents were administered independently. **Conclusion** We conclude that integration of environmental management techniques using shade-providing plants and predatory fish and/or Bti are effective and sustainable tools for the control of malaria and other mosquito-borne disease vectors.