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Effect of repeated application of microbial larvicides on malaria transmission in central Côte d'Ivoire

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The effect of repeated application of *Bacillus thuringiensis* var *israeliensis* (*Bti*) and *B. sphaericus* (*Bs*) on different entomological parameters and malaria transmission was investigated in a village in central Côte d'Ivoire. First, all potential mosquito breeding sites identified toward the end of the rainy season in a radius of 1.5-km from the village centre were characterized. Next, we applied *Bti* (0.8 mg/l) and, 3-4 days later, *Bs* (10 mg/l). The study area was monitored for breeding sites over a 7-month period and microbial larvicides were applied once every 3 wk. Additionally, adult mosquitoes were collected inside and outside human habitations in 4 cross-sectional surveys in 2006 using human landing catches. Repeated application of *Bti* and *Bs* showed an effect on *Anopheles* larvae; in 3 of the last 4 surveys no *Anopheles* larvae were found, whereas before, 6.5-23.7% of the sites harbored *Anopheles* larvae. The number of sites positive for *Culex* larvae decreased after the third treatment round. A total of 2,361 adult mosquitoes were caught in 64 man-night catches; 59.5% of them belonged to the genus of *Anopheles*, with *An. funestus s.l.* being the most abundant species. Entomological transmission parameters recorded for 2006 showed a decline in the biting rate of both *An. funestus* and *An. gambiae* compared to the preceding year. Moreover, the entomological inoculation rate of *An. funestus* was significantly reduced (from 328 to 142; $P = 0.005$) whereas that of *An. gambiae* remained stable. In conclusion, microbial larvicides might play a role in an integrated approach for malaria control.

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