VECTOR CONTROL IN RURAL AREAS

by

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1. INTRODUCTION

In rural areas yellow fever is transmitted by Aedes aegypti and also by forest mosquitoes.

Although, in Africa at least, Ae. aegypti may form populations with an exclusively forest habitat, in villages it is generally a domiciliary or peridomestic species with man-made larval breeding places.

Forest vectors use a wide-range of natural breeding places such as: holes in rocks and trees, cut bamboos, axils of plants with sheath-like leaves, etc. The multiplication of certain species may be favoured by the cultivation of host plants for use or ornament. In Africa, this applies particularly to Aedes simpsoni.

Vector control may be undertaken as a preventive measure or when cases of yellow fever occur.

2. PREVENTION OF VECTOR MULTIPLICATION

Man-made larval breeding places should be removed whenever their presence is not essential. Water storage containers which cannot be removed should be emptied and carefully cleaned at least twice a week to prevent any larval development leading to the production of adult mosquitoes. When neither removal nor periodic cleaning is possible, such breeding places may be treated with insecticides to prevent any Ae. aegypti larvae developing.

The same measures may be applied to natural sites. Holes in trees, bamboos or rocks can be filled in. Plants with sheath-like leaves should be destroyed wherever possible. Those which it is essential to keep should be treated periodically with larvicides. Insecticide treatment should, however, be the exception.

Environmental hygiene and health education are the main preventive measures and it is up to the inhabitants and communities concerned to take the necessary precautions. Coercive measures should generally be provided for to deal with individual negligence. Ae. aegypti may thus at little cost, be prevented from multiplying but it is much more difficult to control the numbers of wild vectors except in restricted areas where there is a dense human population and few natural larval breeding places.

The application of chlorinated organic insecticides in houses and in and immediately around (perifocal treatment) potential larval breeding places was for a long time the basis of...
preventive chemical control of *Ae. aegypti*. These compounds are now going out of use following the widespread appearance of *Ae. aegypti* populations resistant to DDT, BHC and dieldrin (Anonymous, 1970; Mouchet et al. 1970). At present the use of fairly persistent larvicides is recommended. These may be applied to potential larval breeding places to kill the larvae as they hatch out. The most promising compound is abate which has practically no acute or chronic toxicity for mammals (Gaines et al. 1967; WHO for the treatment of drinking-water (Anonymous, 1967). This product added to water storage containers in the form of sand granules containing one per cent abate to give an initial concentration of 1 ppm, shows marked effectiveness for approximately one month (Gayral & Pichon, 1969) and, under very favourable conditions, may eliminate *Ae. aegypti* for two to five months (Bang & Tônh, 1969b). In containers and natural sites where the water is unlikely to be used for drinking the initial concentration of abate may be raised to 5 ppm, or this product may be replaced by dursban at 1 ppm, which gives even better results (Taylor, 1968; Bank & Tôn, 1969a).
the value of treatment (Kilpatrick et al. 1970a). There is still room for improvement in both the spraying technique and the type and dosage of insecticides to be used (Lofgren, 1970; Lofgren et al. 1970c). Tests should be carried out over a greater range of habitats and vegetation zones so that ways of applying this new technique in different regions may be specified.

The products currently authorised for fogging in inhabited areas are malathion, fenthion,


Lofgren C. S. et al. (1970b) The effectiveness of ultra-low-volume applications of malathion at a rate of 6 US fluid ounces per acre in controlling Aedes aegypti in a large-scale