

Mathematical modelling of a replacement strategy to control mosquito-borne disease

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In order to control epidemics of mosquito-borne diseases for which there is no vaccine, such as dengue fever, several strategies aim to act directly on the mosquito population. One of these strategies consists of introducing a bacterium, called Wolbachia, which blocks the transmission of the pathogen. Since this bacterium is maternally transmitted, the idea is to release Wolbachia-infected mosquitoes to replace the wild population. In this presentation, we will use a reaction-diffusion system to model the dynamics of this replacement strategy and study its feasibility and to optimize it.