Oral Communication (Mathematics and Medicine)

Dengue transmission: two techniques to control it

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Abstract

Vector-borne diseases have a large impact on human health around the world, representing 17% of all infectious diseases. These diseases can be due to parasites, bacteria or viruses and be transmitted by different types of vectors like, for instance, ticks, fleas or mosquitoes. This seminar is devoted to the study of optimal release strategies to control vector-borne diseases, such as dengue, Zika, chikungunya and malaria. Two techniques are considered: the sterile insect one (SIT), which consists in releasing sterilized males among wild vectors in order to perturb their reproduction, and the Wolbachia one (presently used mainly for mosquitoes), which consists in releasing vectors, that are infected with a bacterium limiting their vector capacity, in order to replace the wild population by one with reduced vector capacity. We will begin by describing the model without control strategies and then describe the results obtained for the two techniques.

References

[1] L. Almeida, J. Bellver Arnau, Y. Privat, C. Rebelo: *Vector-borne disease outbreak control via instant vector releases.* (submitted)