

Alien mosquitoes, control strategies under the LEXEM lens

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The study on alien mosquitoes financed by the Autonomous Province of Trento as part of the LEXEM project

[PRESS RELEASE] Within the LEXEM (Laboratory of Excellence for Epidemiology and Modeling) project funded by the Autonomous Province of Trento and coordinated by the Edmund Mach Foundation, a study just published on Scientific Reports, conducted by researchers at the Dondena Center of the Bocconi University in Milan in collaboration with Fondazione Bruno Kessler of Trento, the FEM of San Michele all'Adige, the Istituto Zooprofilattico Sperimentale delle Venezie and the Istituto Superiore di Sanità of Rome, scientifically confirmed the best strategies for controlling alien mosquitoes, ie the combination of larvicides, adulticides and removal of mosquito breeding sites.

Larvicides have proven to be more beneficial in early summer and in warmer seasons, while adulticides should be preferred in autumn and in colder seasons. The results of this work provide useful indications to support urgent decisions by public health authorities in response to emerging mosquito epidemics.

The risk of autochthonous transmission of vector diseases (transmitted by mosquitoes), such as Zika, Dengue and Chikungunya in Europe, is mainly due to imported cases that are recorded sporadically in international travellers returning from countries where the disease is endemic. Since there are often no specific treatments or vaccines, in most cases the containment of potential epidemics lies above all on the interruption of the transmission process, through the reduction of mosquito density.

Recent research based on the Italian experience of two short outbreaks of Chikungunya, a disease transmitted by tiger mosquitoes, in 2007 and 2017, shows that several vector control strategies are needed, depending on when the first cases are notified. In this way, the study provides useful indications to the authorities responsible for drawing up policies aimed at controlling outbreaks of emerging vector-borne diseases.

In particular, the results suggest that, if a case of Chikungunya is notified in late spring or summer, the optimal response is to combine the application of adulticides and larvicides and to remove tiger mosquito breeding sites. In addition, applications of larvicides are more cost-effective in early summer and in warmer seasons, while applications of adulticides are more cost-effective in autumn and in colder seasons.

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[The containment of potential outbreaks triggered by imported Chikungunya cases in Italy: a cost-utility epidemiological assessment of vector control measures](#)

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