Analysis of model for the transmission dynamics of Zika with sterile insect technique

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One of the major reason for the persistence of Zika and other vector borne diseases has been lack of effective mosquito control techniques. Sterile insect technique (SIT) is a non polluting biological method of mosquito control, where sterile mosquitoes are predominantly non reproductive. We present a new deterministic model for the transmission dynamics of Zika, by incorporating both human and mosquito population, with fraction of mosquitoes being sterilized. We consider both aquatic and non-aquatic stages of mosquitoes, so as to evaluate the effect of mosquito control in the transmission of the disease. We computed the basic reproduction number (R_0), and theoretically analysed the stability properties of the disease-free equilibrium (DFE) and the endemic-equilibrium (EE). In addition, effect of human-human transmission, and other important parameters were assessed. Numerical simulations to support the results will be presented.

References

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