CONTROL STRATEGIES USING STERILE INSECT TECHNIQUE

Roumen Anguelov
University of Pretoria, Pretoria, South Africa

Yves Dumont
University of Pretoria, Pretoria, South Africa
CIRAD, Umr AMAP, Pretoria, South Africa
AMAP, Univ Montpellier, CIRAD, CNRS, INRA, IRD, Montpellier, France

Ivric Valaire Yatat Djeumen
University of Pretoria, Pretoria, South Africa

In the last decades, the development of sustainable insect control methods has become one of the most challenging issues to reduce the impact of human vector borne diseases, like malaria, dengue, chikungunya or crop pests, like fruit flies. The focus of this talk is Sterile Insect Technology (SIT) method of control of mosquito populations. This topic has received already significant attention as visible from [1]-[3] and the references therein. For the temporal dynamics we consider a compartmental model, which is minimalistic in the sense that it uses smallest possible number of compartments allowing for adequate modelling of the mechanism of SIT control. It is simpler than the models in [1], [2], [3], but it has the same asymptotic properties under SIT control. Specifically, even small level of SIT control induces bi-stable asymptotic dynamics. The spatio-temporal admits a travelling wave solution. We present efficient SIT control strategies of changing the direction of the wave from invasion to retreat.

REFERENCE

