Memorial

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In conclusion, the model presented in this work exhibited the genetic dynamics expected by data from the literature, and the output shows that the genetics of the vectors do influence human population dynamics: when there is a resistant strain of vectors, there are more infected humans and infected vectors. Another aim of this study was the verification, in a SIR model, that the group of greater fitness increases in frequency in the total population. We did not find any other example in the literature. In addition, the simulations demonstrate that the presence and inheritance pattern of insecticide-resistant vectors do affect the number of infected vectors. However, further studies should be carried out, such as considering the different times at which epidemiological and genetic changes happen, as it could make the model more realistic. Furthermore, it would be interesting to develop another mathematical model to calculate the optimum control of vectors using the model in this study, which considers the evolution of insecticide resistance in a vector population. It would be especially important since these chemicals should be used in such a way as toobtained in this computational study, we suggest our model could be applied to several vector-borne s.[**Andrade2017**]