A Controlled Mathematical Model for Population Dynamics in an Infested Honeybees Colonies

Authors : Chakib Jerry, Mounir Jerry

Abstract : In this paper, a mathematical model of infested honey bees colonies is formulated in order to investigate Colony Collapse Disorder in a honeybee colony. CCD, as it is known, is a major problem on honeybee farms because of the massive decline in colony numbers. We introduce to the model a control variable which represents forager protection. We study the controlled model to derive conditions under which the bee colony can fight off epidemic. Secondly we study the problem of minimizing prevention cost under model's dynamics constraints.

Keywords : honey bee, disease transmission model, disease control honeybees, optimal control
Conference Title : ICMBE 2016 : International Conference on Mathematical Biology and Ecology
Conference Location : London, United Kingdom
Conference Dates : August 25-26, 2016