

PLANT-PEST-NATURAL ENEMY MODEL WITH IMPULSIVE BIOLOGICAL AND CHEMICAL CONTROL

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Abstract. In this paper, a plant pest mathematical model is presented with integrated pest management through impulse. Two control measures: Biological(Natural Enemies) and Chemical pesticides are taken in consideration in the model through impulse. Boundedness and the sufficient conditions of existence of the positive periodic solutions is established. Further, the local stability of the pest extinction equilibrium point is studied using Floquet's theory. It is proved that the pest extinction equilibrium point is globally stable at $T < T_{\max}$ and the system is permanent for $T > T_{\max}$. Numerical data per week are taken to illustrate the theoretical results using MATLAB software.

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