



**HOPF BIFURCATION ANALYSIS FOR THE PEST-PREDATOR
MODELS UNDER INSECTICIDE
USE WITH TIME DELAY**

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Abstract

We consider a delayed Pest-predator model under insecticide use. First, the paper considers the stability and local Hopf bifurcation for a modified Pest-predator model with time delay. In succession, using the normal form theory and center manifold argument, we obtain some explicit results which determine the stability, direction and other properties of bifurcation periodic solutions.

Keywords and phrases: hopf bifurcation, stability, time delay, pest-predator model, center manifold, normal form.

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