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The Dynamics of Modified Leslie-Gower the Pest-Predator System with Additional Food and Fear Effect

Authors

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Abstract
We have studied a dynamic analysis of the prey-predator model that describes the interaction between pests and predators as natural enemies. The model is considering a Modified Leslie-Gower prey-predator model with the nature of fear of the growth of pests and additional food to predator. The predation uses the Holling type II response function by assuming that the predator also needs additional food to survive. We analyze the dynamics of the system includes determining the equilibrium point as well as local stability analysis. It shows that there are four equilibriums in which each equilibrium point exists and three equilibrium points are local asymptotically stable with some sufficient conditions. Numerical simulations were carried out to support the analytical finding. The numerical simulations also indicate that bifurcation occurs and the possible phase portraits diagram has been depicted. The simulation results and discussion of the diagram bifurcation are lucidly presented in the text of the paper.

Keywords
Dynamics; Pest-predator; Stability; Bifurcation

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Dear Author(s): **Rudianto Artiono, Budi Priyo Prawoto, Dian Savitri, Dimas Avian Maulana, Nur Izzati Hamdan, and Nurul Syaza Abdul Latif**

Thank you for considering your participation.

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