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On bionomic model of integrated pest management of a single Pest population. (English)

Zbl 1128.34314
Differ. Equ. Dyn. Syst. 12, No. 3-4, 301-330 (2004).

Summary: The paper considers a density-independent prey population in presence of its natural enemy (predator) and constructs two dynamic models of integrated Pest management where the chemical means of control is always the use of pesticide, whereas the biological means of control is, in one case, the release of additional predators and in other case, the release of sterile males. Next the bio-economic aspects of the model are considered by introducing suitable profit function in the dynamic models. Finally application of Pontryagin's maximum principle solves the corresponding optimal control problem. The results are also verified theoretically under special choice of parameters compatible with the model.

MSC:

34C60	Qualitative investigation and simulation of ordinary differential equation models	Cited in **6** Documents
49J15	Existence theories for optimal control problems involving ordinary differential equations	
92D30	Epidemiology	

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