

论文

具有脉冲效应和综合害虫控制的捕食系统

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摘要 本文通过生物控制和化学控制提出了具有周期脉冲效应与害虫控制的捕食系统. 系统保护天敌避免灭绝, 在一些条件下可以使害虫灭绝. 就是说

当脉冲周期小于某一临界值时, 存在全局稳定害虫灭绝周期解. 脉冲周期增大大于临界值时, 平凡害虫灭绝周期解失去稳定性并产生正周期解, 利用

分支理论来研究正周期解的存在性. 进而, 利用李雅普诺夫函数和比较定理确定了持续生存的条件.

关键词 [生物控制](#) [捕食者-食饵系统](#) [脉冲效应](#) [分支](#)

分类号

PREDATOR-PREY SYSTEM WITH IMPULSIVE EFFECT AND INTEGRATED PEST CONTROL

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Abstract In this paper, predator-prey systems with periodic impulsive effect concerning pest control are proposed through biological control and chemical control. The model has the potential to protect natural enemies from extinction, but under some conditions may also serve to demonstrate the extinction of the pest, that is, there exists a global stable pest-eradication periodic solution when the impulsive period is less than some critical values. When the impulsive period increase, the trivial periodic pest-eradication solution loses its stability and a positive periodic solution comes out. The existence of a positive periodic solution is also studied by the bifurcation theory. Conditions for permanence is established via the method of comparison involving multiple Liapuno \grave{a} functions.

Key words [Biological control](#) [predator-prey system](#) [impulsive effect](#) [bifurcation](#)

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扩展功能

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