Abu-Saris, Raghib; **AlSharawi, Ziyad**; **Rhouma, Mohamed Ben Haj**

The dynamics of some discrete models with delay under the effect of constant yield harvesting. (English) Zbl 1341.92056

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Summary: In this paper, we study the dynamics of population models of the form $x_{n+1} = x_n f(x_{n-1})$ under the effect of constant yield harvesting. Results concerning stability, boundedness, persistence and oscillations of solutions are given. Also, some regions of persistence and extinction are characterized. Pielous equation was considered as an example on these models, and a connection with a Lyness type equation has been established at certain harvesting level, which is used to give an explicit description of a persistent set.

MSC:

92D25 Population dynamics (general)
91B76 Environmental economics (natural resource models, harvesting, pollution, etc.)
39A21 Oscillation theory for difference equations
39A22 Growth, boundedness, comparison of solutions to difference equations
39A30 Stability theory for difference equations

Keywords:

yield harvesting; stability; boundedness; persistence; oscillations; Pielous equation

Full Text: DOI

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