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A global attractor in some discrete contest competition models with delay under the effect of periodic stocking. (English) [Zbl 1297.39018](#)

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Summary: We consider discrete models of the form $x_{n+1} = x_n f(x_{n-1}) + h_n$, where h_n is a nonnegative p -periodic sequence representing stocking in the population, and investigate their dynamics. Under certain conditions on the recruitment function $f(x)$, we give a compact invariant region and use Brouwer fixed point theorem to prove the existence of a p -periodic solution. Also, we prove the global attractivity of the p -periodic solution when $p = 2$. In particular, this study gives theoretical results attesting to the belief that stocking (whether it is constant or periodic) preserves the global attractivity of the periodic solution in contest competition models with short delay. Finally, as an illustrative example, we discuss Pielou's model with periodic stocking.

MSC:

[39A30](#) Stability theory for difference equations
[39A23](#) Periodic solutions of difference equations
[39A10](#) Additive difference equations
[92D25](#) Population dynamics (general)

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[periodic solution](#); [global attractivity](#); [contest competition models](#); [Pielou's model](#); [periodic stocking](#)

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