

# **SIMULTANEOUS IMPACTS OF SPATIAL DISPERSAL AND PROLONGED DIAPAUSE ON THE GROWTH RATE OF A METAPOPOPULATION IN A PATCHY ENVIRONMENT**

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Spatial dispersal and prolonged diapause are two major traits in evolution and populations dynamics, often considered as being two alternative strategies. Consequently, the simultaneous impacts of these two traits on the population growth rate are little studied. The growth rate of a metapopulation, made up of two populations connected by a certain dispersal rate, living on two different qualities patches, is determined by application of the “vec-permutation” method. The growth rate variations are studied in two stages populations, under a constant environment then a stochastic one. Results show that, in the case of a constant environment, the growth rate is optimal when the metapopulation is with simple diapause and the dispersal rate is null. However, under a stochastic environment, the mean stochastic growth rate is optimal for mixed prolonged diapause strategies (bet-hedging) and a non null dispersal rate.