BET-HEDGING STRATEGIES IN CONTACT-PROCESS-LIKE DYNAMICS

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In biology and ecology, individuals or communities of individuals living in unpredictable environments often alternate between different evolutionary strategies to spread and reduce risks. Such behavior is commonly referred to as "bet-hedging". Long-term survival probabilities and population sizes can be much enhanced by exploiting such hybrid strategies. Here, we study a simple model based on the physics of the Contact Process in which individuals can choose between a poor but safe strategy, a better but risky alternative, or a combination of both, and we show that the benefits derived from bet-hedging strategies are much enhanced for higher environmental variabilities (large external noise) and/or for small spatial dimensions (large intrinsic noise) [1]. These circumstances are typically encountered by living systems, thus providing us with a possible justification for the ubiquitousness of bet-hedging in nature.

[1] J. Hidalgo, S. Pigolotti and M.A. Muñoz, ArXiv:**1412.1066**, (2014).