

Dinámica de ecuaciones difusivas de tipo convectivo-adventivo

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We study the dynamics of a reaction-diffusion-advection model for a single species in a spatially heterogeneous environment. Our species disperses by random diffusion and advection along the environment gradients and their dispersal rates are represented by μ and α , where μ measures the random rate of territorial dispersion and α measures the tendency of preferential movement of species along the environment gradients. The advection depends on the gradient of a function that represents the local intrinsic growth rate and α . Essentially, we show that a unique positive steady state exists for every positive dispersal rate. Moreover, we establish some upper bounds for the steady states, which are independent of the dispersal rates. To establish these properties we use comparison techniques involving the maximum principle. The results suggest that the mass of the steady state is concentrated in the maximum of the function that represents the local intrinsic growth rate when α/μ is large.