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In this paper, we develop the method of generalized quasilinearization to reaction diffusion equations using coupled lower and upper solutions. Starting with the coupled lower and upper solutions we develop monotone iterates which are solutions of mildly nonlinear reaction diffusion equations. These iterates converge uniformly and monotonically to the unique solution of the reaction diffusion equations under consideration. The rate of convergence is of higher order. A numerical example has been provided to demonstrate the application of the generalized quasilinearization method we have developed. (Received September 27, 2005)