



BACTERIAL DEGRADATION OF IMIDACLOPRID

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ABSTRACT

The use of pesticides has become an integral part of the modern agricultural system. Pesticides (Fungicides, herbicides, insecticides, nematicides, rodenticides, and fumigants) are a large and varied group of substances that are specifically designed to kill biological organisms including weeds, insects, and rodents. However, the extensive use of pesticides may result into their accumulation in the agricultural produce. Their low biodegradability has classified these chemicals as persistent toxic substances. Besides contaminating the environment, including the soil, pesticide residues also affect useful organisms like earth worms, bees, spiders, plants and like to natural decay. Imidacloprid belongs to neonicotinoids, a relatively new class of synthetic organic insecticide used to control piercing and sucking insect pests. Bioremediation is the most effective innovative technology that makes use of living microorganisms to degrade environmental pollutants. Thirty one bacterial isolates were retrieved from pesticide contaminated agricultural soils. The degradation efficiency of four selected bacterial isolates was analyzed in sterilized soil amended with 100 ppm of imidacloprid under laboratory conditions. Imidacloprid level decreased in inoculated as well as uninoculated treatments however, in the inoculated treatments, residual imidacloprid was found to be less as compared to control. The imidacloprid left was 11.0, 10.0, 15.8 and 27.8 with isolate IP1, IP5, IP6 and IP7 respectively.

Keywords: Biodegradability, Bioremediation, Microorganisms, Neonicotinoids, Pesticides