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EFFECTS OF A CARBENDAZIM-MANCOZEB FUNGICIDAL MIXTURE
ON SOIL MICROBIAL POPULATIONS AND SOME ENZYME ACTIVITIES

IN SOIL

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ABSTRACT

The effects of a Carbendazim-Mancozeb fungicidal mixture on microbial populations and some enzyme activities of three selected soils of Kwara State, Nigeria were studied. The soil dilution method was used to isolate bacteria, fungi, actinomycetes and some functional microbial groups from treated soils. Cultivation and enumeration of the soil microorganisms were made on different selective media. Assays for cellulases and pectinases in the treated soils were carried out. The populations of actinomycetes, bacteria and fungi were reduced significantly by the application of the fungicide. The fungicide applied at a concentration of 2.34mg/kg soil had a greater (p < 0.05) inhibitory effect than the recommended concentration of 1.67mg/kg soil. The populations of nitrogen fixers nitrifying bacteria and cellulolytic organisms were also significantly (p < 0.05.) reduced at the two concentrations. The fungicidal mixture equally lowered the cellulose and pectinase enzyme activities in soil significantly, with a return to normalcy by 60 days after treatment. A re-establishment of the soil microbial populations was observed by 21 days after treatment. It was concluded that the use of the Carbendazim-Mancozeb mixture should be with caution since it reduced the populations of ecologically important non-target organisms and that the recommended concentration should be adhered to.

Keywords: Carbendazim-Mancozeb, Microbial Populations, Pectinases, Cellulases