

CREATION OF PESTICIDE-POLYRESISTANT *TRICHODERMA* STRAINS FOR BIOCONTROL PURPOSES BY MUTAGENESIS AND PROTOPLAST FUSION

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Among 128 isolates of *Trichoderma*, five cold-tolerant strains were found to possess excellent *in vitro* antagonistic properties against plant pathogenic *Microdochium nivale*, *Fusarium culmorum*, *F. oxysporum* and *Pythium debaryanum* strains [1]. From the 16 pesticides tested, 7 fungicides, copper sulphate, carbendazim, mancozeb, tebuconazol, imazalil, captan and thiram showed significant inhibition of the *Trichoderma* strains, the minimal inhibitory concentrations were approximately 300, 0.4, 50, 100, 100, 100 and 50 µg/ml, respectively.

The effect of the 2 *Trichoderma* isolates on the germination of wheat seeds and on the growth of the plants was examined. The seeds and the plants were not impaired, furthermore, the presence of the *Trichoderma* strains had an unequivocally positive influence on germination and growth as compared with the control.

Mutants resistant to copper sulphate, carbendazim, mancozeb and tebuconazol were isolated from 2 *Trichoderma atroviride* strains by ultraviolet light mutagenesis [2]. The cross-resistance capabilities and *in vitro* antagonistic properties of the mutants were determined in the presence of sublethal concentrations of distinct fungicides mentioned above. Carbendazim-resistant mutants showed total cross-resistance to benomyl and thiabendazole at a concentration of 20 µg/ml.

RAPD analysis of the genomic DNA from the wild-type and pesticide-resistant mutant strains was performed in order to find genetic markers enabling the identification of these strains isolated back from nature. Our pesticide-resistant mutant strains can be identified unequivocally based on their resistance and RAPD markers.

Protoplast fusion was carried out using carbendazim and tebuconazol resistant mutants of the 2 starter strains and 3 haploid recombinants were found among the heterocaryons of the strain T66. These pesticide-polyresistant mutants are potential candidates for application in complex integrated pest management.

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