

Research Paper :

Trichoderma based granular formulation for control of root diseases of crops

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SUMMARY

Biological control is one of the key components of integrated pest management that envisages the conservation and augmentation of naturally occurring bio-agent such as parasitoids, predators, entomopathogens and antagonistic fungi and bacteria. Biofungicides include in a broader sense fungicides of biological origin *i.e.* botanical and microbial. In the present paper, *Trichoderma viride* based nutrient rich granular formulation developed which can be easily applied in the field, have visible bio-inoculums on granules and have a pretty long viability at room temperature. The nutrient based sago preparation has also been compared with the other base materials.

Key words :
Trichoderma viride, Root disease, Bio-control, Farmulation

Use of chemicals in crop production is unavoidable. However, their excessive use is creating health problem due to pollution of air, water and soil, *i.e.*, environment and food product, now under IPM strategies biopesticides and botanical pesticides have emerged as a eco-friendly approach to protect environment for sustainable agriculture and life on the plant (Tiwari, 1995).

Members of the fungal genus *Trichoderma* have been extensively studied particularly due to their ability to acts as bio-control agents and their antagonistic activity. The inappropriate and indiscriminate uses of fungicides and antibiotics have led to serious environmental threat to human life. Growers are using fungicides and antibiotics for the control of various diseases ignoring the persistency of these chemicals.

Besides their non-target effects and hazardous nature, they are becoming more expensive and some are loosing their effectiveness because of development of resistant strains. Thus, there is an all-round compulsion to go in for bio-rational alternative arsenals, which can be eco-friendly and benign to environment. Bio-control agents are the best alternative available today. The antagonistic activity of the bio-control agents has long been recognized as an important factor in the management of soil borne diseases.

There is considerable interest in manipulating the soil microbial community to

achieve the biological control of soil borne plant pathogens (Cook and Baker, 1983). Biocontrol is primarily linked to a sustained increase in active propagules of the antagonist. Root rot is the most serious disease caused by *Rhizoctonia solani* and it is soil borne. *Trichoderma* species are widely used for the biological control of *Rhizoctonia solani* infection in root rot of crops and vegetables. They are recommended to use it along with locally available organic material like farmyard manure, neem cake, vermicompost etc.

MATERIALS AND METHODS

In the present study different base material *i.e.* groundnut cake, mustard cake, neem cake, mahuwa cake, sesame cake, linseed cake, niger cake, saw dust and sago have been tried. The oil cakes and saw dust were crushed in powder from and moistened with water separately. To enrich with nutrient sago granules, were soaked in 1% of yeast, peptone and glucose for 3 minutes. Sago dipped in plain water was maintained as a control.

The saw dust, moist oil cakes and sago 100 gram each were filled in 250 ml conical flasks and plugged with cotton. These flasks were inoculated with 5 discs of 7-10 days of old culture of *Trichoderma viride* maintained on Potato dextrose agar medium. These flasks were prepared for each treatment and incubated for three weeks at 26±2° C. The observations were recorded for growth and

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