

TRICHODERMA: A BIO-CONTROL AGENT FOR MANAGEMENT SOIL BORN DISEASES

Trichoderma is a very effective biological mean for plant disease management especially the soil born. It is a free-living fungus which is common in soil and root ecosystems. It is highly interactive in root, soil and foliar environments. It reduces growth, survival or infections caused by pathogens by different mechanisms like competition, antibiosis, mycoparasitism, hyphal interactions, and enzyme secretion.

Benefits of Trichoderma*

1. **Disease Control:** Trichoderma is a potent biocontrol agent and used extensively for soil born diseases. It has been used successfully against pathogenic fungi belonging to various genera, viz. Fusarium, Phytophthora, Scelerotia etc.
2. **Plant Growth Promoter:** Trichoderma strains solubilize phosphates and micronutrients. The application of Trichoderma strains with plants increases the number of deep roots, thereby increasing the plant's ability to resist drought.
3. **Biochemical Elicitors of Disease:** Trichoderma strains are known to induce resistance in plants. Three classes of compounds that are produced by Trichoderma and induce resistance in plants are now known. These compounds induce ethylene production, hypersensitive responses and other defense related reactions in plant cultivars.
4. **Transgenic Plants:** Introduction of endochitinase gene from Trichoderma into plants such as tobacco and potato plants has increased their resistance to fungal growth. Selected transgenic lines are highly tolerant to foliar pathogens such as Alternaria alternata, A. solani, and Botrytis cinerea as well as to the soil-borne pathogen, Rhizectonia spp.
5. **Bioremediation:** Trichoderma strains play an important role in the bioremediation of soil that are contaminated with pesticides and herbicides. They have the ability to degrade a wide range of insecticides: organochlorines, organophosphates and carbonates.

Method of application:

1. **Seed treatment:** Mix 6 - 10 g of Trichoderma powder per Kg of seed before sowing.
2. **Nursery treatment:** Apply 10 - 25 g of Trichoderma powder per 100 m² of nursery bed. Application of neem cake and FYM before treatment increases the efficacy.
3. **Cutting and seedling root dip:** Mix 10g of Trichoderma powder along with 100g of well rotten FYM per liter of water and dip the cuttings and seedlings for 10 minutes before planting.
4. **Soil treatment:** Apply 5 Kg of Trichoderma powder per hectare after turning of sun hemp or dhainch into the soil for green manuring. Or Mix 1kg of Trichoderma formulation in 100 kg of farmyard

manure and cover it for 7 days with polythene. Sprinkle the heap with water intermittently. Turn the mixture in every 3-4 days interval and then broadcast in the field.

5. Plant Treatment: Drench the soil near stem region with 10g Trichoderma powder mixed in a liter of water

Precautions:

- Don't use chemical fungicide after application of Trichoderma for 4-5 days.
- Don't use trichoderma in dry soil. Moisture is an essential factor for its growth and survivability.
- Don't put the treated seeds in direct sun rays.
- Don't keep the treated FYM for longer duration.

Compatibility:

Trichoderma is compatible with Organic manure Trichoderma is compatible with biofertilizers like Rhizobium, Azospirillum, Bacillus Subtilis and Phosphobacteria.

Trichoderma can be applied to seeds treated with metalaxyl or thiram but not mercurials. It can be mixed with chemical fungicides as tank mix.