

TRICHODERMA – AN OVERVIEW

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Trichoderma has begun to be used as an alternative to fungicides in the control of plant diseases in recent years. Today all farmers use Trichoderma. The use of Trichoderma in disease control has increased rapidly as farmers have become aware of the problems of fungicides. Trichoderma fungi are often used to control soil and crop diseases. Trichoderma spray is also effective in controlling leaf diseases. However, for this, the field needs a good environment for mushroom growth. Chemical fungicides do not last long in soil. They can also affect the ability of soil bacteria, but the ability of Trichoderma fungi remains in the soil for a long time, which is good for bacteria. Trichoderma is prepared in powder (glucose-based) form in the laboratory. Wheat flour (sugar-based flour), which is obtained from cow manure and organic fertilizer and is widely used in soil, can also be irrigated with drip irrigation. What is Trichoderma? Why should I use Trichoderma? Let's learn about this in detail in this article.

Keywords: - Trichoderma, Fungi, Organic matter, Viride, Harzianum, rhizosphere.

INTRODUCTION

Trichoderma is a microscopic agent that works in the root zone (rhizosphere) of plants. This fungus is often found in organic residues. Therefore, it is an important part of fungus in the fight against many soil-borne fungal diseases. Trichoderma is a beneficial bacterium that thrives on organic matter. These fungi are soil-borne fungi that feed on other fungi. There are nearly 70 types of these diseases. Among these, Trichoderma viride and Trichoderma harzianum are widely used in biological control. Trichoderma is one of many beneficial bacteria found in soil. Root rot and blight of plants can be controlled by hyphomycetes. There are two species of Trichoderma spp. One is Trichoderma harzianum, the other is Trichoderma viride. The concentrate is sold in 250 g and 1 kg packages. This disease is characterized by

rapid growth in soil that does not allow other fungi (Phytophthora, Fusarium, Pythium, Rhizoctonia, etc.) to grow.

Mechanism of action of Trichoderma: -

First, the Trichoderma fungus expands its kingdom by burrowing into threads of harmful bacteria, absorbing their nutrients and multiplying. For this reason, mushrooms have a problem with adhesion. This mushroom grows very fast. Therefore, the fungus competes for the absorption of nutrients. Carbohydrates, nitrogen, vitamins, etc. does not contain. The substance necessary for the growth of fungi slows down the growth of fungi. Additionally, Trichoderma fungi produce gliotoxin and copies called green. These copies kill the growth of the biopathogenic fungus; In

addition, since the mycelium of these bacteria multiplies in a thin layer on the roots, the mycelium of the fungal disease cannot penetrate the roots.

The reasons for this Tantra system are as follows:

- ✓ Grows faster than other fungi
- ✓ While this fungus is growing, some hormones are produced, thus killing harmful fungi.
- ✓ Some of these hormones act as nutrients for crop growth (called biopriming).
- ✓ This fungus grows on organic matter, i.e., dung and leaf litter.

What form does Trichoderma comes in?

Trichoderma is available in both liquid and powder form.

How to use Trichoderma?

Fungi of the genus Trichoderma are also used to break down organic matter in the soil. Trichoderma can be used in many ways. For example, it is used in processing seeds, cultivating soil, applying solutions around tree stumps, spraying crops and making organic fertilizer.

- 1) **Seed treatment:** A good and effective way to use Trichoderma fungi is to apply Trichoderma powder to the seeds at the time of planting at the rate of 4 g/1 kg of seeds. Care should be taken to ensure that all genes are balanced. Seeds should be dried in a cool place and planted immediately.
- 2) **Soil Treatment:** For the control of soil-borne fungi. Mix 1 to 2.5 kg of Trichoderma powder with 25 to 30 kg of rotted cow manure and spread on one

hectare of land, mixing with soil and water if possible.

How do we use Trichoderma?

- ✓ Fruit crops should be fertilized once or twice a year @2 lit/acre.
- ✓ Vegetables and annual flowers should be drenched at the time of planting or drenched with water after planting. Here, Trichoderma can be given twice in a month.
- ✓ It can also be applied on Polyhouse crops.

Trichoderma Application Rate:

- For watering plants Trichoderma is usually applied at the rate of 2 liters. 100 ml or 10 liters per hectare.

- For fruit, take 200 kilograms of compost per acre, add 2 liters of Trichoderma and add some water. Leave it in a cool place for eight days. During this time, the fungus grows. Then spread the Trichoderma compost mixture over the entire soil.

- In the first eight days after planting, 2 liters of Trichoderma should be added to 200 liters of water per decare and the dose should be between 50 and 100 ml. Apply near the base of each plant or via drip irrigation.

- It should be used at the rate of 250 grams per 100 liters of water for pomegranates, and 1 liter per tree for trees, this will help control.

- Normally, there should be sufficient decomposition. Cow manure @ 250 g Trichoderma should be mixed with 100 liters of water. It is sprinkled on a cow dung pile and the mixture is used on an acre of land before planting. place. Trichoderma is used

along with cow dung, organic fertilizers and neem powder to get good results. Trichoderma grows best in organic matter, compost, when there is moisture.

- Using 250 grams of Trichoderma per 100 liters in the nursery will prevent seedling death after planting. After planting vegetable plants, Trichoderma should be applied to the root area of the plant. This will prevent the spread of the disease.

When to give Trichoderma?

- i. Do not apply it on a sunny day when the soil surface is hot.
- ii. Trichoderma should be used before the onset of the disease.

Benefits of Trichoderma Fungus:

- I. Since Trichoderma grows slowly in the soil, it feeds on other harmful fungi and keeps their growth under control.
- II. Being a natural ingredient, this fungus has no impact on the environment.
- III. It helps to decompose organic matter in the soil and improves the soil.
- IV. Seed treatment increases seed germination by increasing germination power.
- V. Kills harmful or pathogenic fungi.
- VI. Protects the crop throughout the growth stage.
- VII. When Trichoderma feeds on other fungi, it produces antibiotics like Trichodermin, Gliotoxin, and Viridin. which is toxic to harmful fungi. Also, Trichoderma helps in the production of organic fertilizers by decomposing organic matter due to this fungus.
- VIII. Being economical reduces costs.
- IX. The use of Trichoderma is increasing day by day for the control of nematodes in

pomegranate orchards. Trichoderma also provides a small amount of nutrients while growing in the root zone of the plant and also releases secretions useful for plant growth, thus promoting vigorous plant growth.

Special Care: - To get the best results from Trichoderma, fungicide use should be discontinued 3 days before and after Trichoderma use.

Conclusion: -

Trichoderma, vegetables, fruits, flowers, etc. It is a widely used biofertilizer and bio fungicide that can be used on almost all crops. It is used not only to protect plants from toxic fungicides, but also to improve soil quality and fertility by destroying organic matter. There is also a need for research on the effective use of Trichoderma to promote permaculture.

Trichoderma is an extraordinary fungal species that makes many contributions to agriculture, industry and environmental management. Its varieties not only have the ability to control biological diseases against plant diseases, but also have the ability to promote plant growth and improve soil health.

As scientists delve deeper into the molecular complexity of Trichoderma's interaction with plants, the potential for its beneficial effects continues to emerge. From permaculture practices to biotechnology, Trichoderma exemplifies the intersection of innovation and problem-solving strategies, highlighting its key role in shaping the future and going green.
