

## HARZINA GOLD

(Trichoderma harzianum 1% W.P. )  
BIO-PESTICIDE

Trichoderma Species - The group of wonder Fungi :

The group Species of Trichoderma Fungi are widely termed by Plant Pathologists world over as a broad spectrum potent Bio-Pesticide for its wonderful ability to control some of the most devastating soil borne fungi in particular, and apart from this it has many other properties like its effectiveness against some viruses, nematodes etc pathogenic to crop plants

### What is Trichoderma harzianum ?

**Trichoderma harzianum** is a filamentous fungus that is widely distributed in the soil, plant material, decaying vegetation, and wood. Trichoderma harzianum. are fungi, that are present in nearly all soils and other diverse habitats. In soil, they frequently are the most prevalent culturable fungi. . Among their other activities, they grow tropically toward hyphae of other fungi, colonise them and finally destroys them, ie they kill the harmful pathogenic fungi in the ecosystem that cause immense damage to some valuable crops under cultivation in the farmers fields.

This fungus has enormous properties to control many severe and deadly plant disease that even the most potent fungicides available today are unable to control.

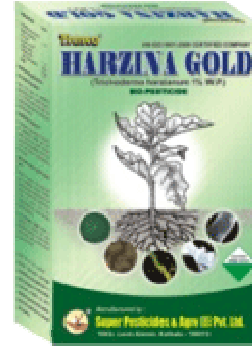
### It has a wide range of Properties such as

- It is a Biological fungicide with world wide application.
- It protects germinating seed, roots and emerging shoots from soil borne pathogens.
- It is also effective against a large number of foliar diseases.
- It is Economical and effective to use in the field
- It is Environment friendly, on toxic, and non habit forming to plants
- It is Ideal for organic farming, IPM and export oriented crops.
- It can be used as a seed dressing agent
- It has properties to induce systemic resistance in plants.
- It can colonize the pathogenic host root system.
- It helps the affected plant to grow again naturally and recover fully
- It has growth promoting properties.

### BIOLOGICAL ACTIVITY:

#### Mode of action:

Competes in the soil for nutrients and rhizosphere, and creates dominance on phyto-pathogenic fungi. In presence of sufficient organic carbon Trichoderma harzianum produces enzymes having lytic effect on target fungi and in contrast in adverse conditions it produces toxins which are



equally harmful, to the pathogenic fungi destroying crops.

Attributes of HARZINA GOLD (Trichoderma harzianum 1% W.P.)

**HARZINA GOLD** is a fine powder containing minimum  $2 \times 10^6$  spores and mycelia of mycoparasitic fungi **Trichoderma harzianum** per gram, which when introduced along-with seeds or at root zone protects the seedlings from attack by soil borne pathogens and promotes healthy growth. **Trichoderma harzianum** establish long lasting colonization of plant roots and penetrate into the epidermis. It produces compounds that stimulate plant growth and induces localized or systemic plant resistance response.

Trichoderma organism in grow very fast. Vigorous growth overshadows the pathogenic fungi, who are overpowered and prevented from infecting the plants. Before pathogens attempt infection via germinating seeds or roots they can be suppressed and controlled with this natural method.

With the use of HARZINA GOLD, Growing roots are protected from attacking pathogenic organisms such as Rhizoctonia, Pythium, Phytophthora, Sclerotinia, Fusarium and Sclerotium, Botrytis and several others.

Trichoderma harzianum in HARZINA GOLD is parasitic to these plant pathogens. Mycelia grow and coil around hyphae of host (pathogenic) fungi when seeds are treated with HARZINA GOLD thus reducing their virulence and the plants are protected. It also destroys resting structures of pathogens.

On seed treatment with HARZINA GOLD, it colonizes roots, increases root mass and health, and consequently yield increases, which chemical fungicides applied at reasonable rates cannot do. Trichoderma harzianum in HARZINA GOLD provides long-term root protection. As a consequence, yields frequently are increased over use of the chemical alone.

Following diseases can be controlled by use of HARZINA GOLD

**Grapes:** Botrytis can be reduced by spray of HARZINA GOLD.

**Pepper :** Root rot caused by Phytophthora can be controlled by soil drench of HARZINA GOLD @ 0.5 % solution.

**Gram :** Collar rot of gram caused by Sclerotium rolfsii, Wilt caused by Fusarium, dry rot caused by Macrophomina phaseoli., root rot caused by Pellicularia filamentosa, stem rot caused by Sclerotinia sclerotiorum can be effectively controlled by seed treatment @ 5-10 gms of HARZINA GOLD /kg of seed

**Groundnut :** Collar rot caused by Pellicularia rolfsii, root rot caused by Pellicularia filamentosa, dry root rot caused by Macrophomina phaseoli can be controlled by treatment of seeds with 5-10 grams of HARZINA GOLD per kg of nuts.

**Potato :** Charcoal rot caused by *Macrophomina phaseoli* and black surf caused by *Rhizoctonia solani* can be controlled by dipping potato tubers in 0.5 % solution of HARZINA GOLD. i.e. 50 grams of HARZINA GOLD per 100 litres of water.

**Wheat :** Loose smut caused by *Ustilago segetum tritici* is a common disease which can be controlled by applying 4-8 gms of HARZINA GOLD per kg of seeds . Even karnal bunt disease teliothores are reduced by treatment with *Trichoderma* spp.

**Ginger and turmeric:** Soft rot caused by *Pythium aphanidermatum* and thread blight caused by *Pellicularia filamentosa* is dramatically reduced by dipping rhizomes in 0.5 % HARZINA GOLD suspension.

**Bhindi, onion and other vegetables:** Damping off caused by *Pythium* and *Phytophthora* sp. can be reduced by seed treatment @4-8gm/Kg and drenching the seed beds with 0.5 % solution of HARZINA GOLD

**Peas, mung and urad :** Seedling blight caused by *Pythium*, dry rot caused by *Macrophomina phaseoli* can be controlled by treating the seeds with 5-10 grams of HARZINA GOLD per kg of seeds.

**Tomato :** Damping off, foot rot caused by *Pythium* sp. *Phytophthora* sp and *Pellicularia filamentosa* in nursery can be reduced by seed treatment @4-8gm/Kg and drenching the seed beds with 0.5 % solution of HARZINA GOLD in seed bed.

In addition to this many other disease which can be controlled are as follows

Name of Crop	Disease controlled by Trichostar	Mode of Application
Apple	White root rot	Soil treatment
Citrus	Root rot	Soil treatment
Guava	Anthraxnose	Foliar spray
Mango	Fruit rot	Fruit treatment
Melon	Wilt	Seed Treatment
Orange	Blue Mold	Fruit dip
Straw berry	Grey Mould	Seed and soil treatment
Water melon	wilt	Seed and soil treatment
Cabbage	Damping Off	Seed treatment
Cauliflower	Damping off	Seed and soil treatment
Chilly	Root rot, fruit rot. Die back	Soil and seed treatment
Brinjal	Wilt,dampingoff, collar rot	Seed and soil Treatment
Fenugreek	Root rot	Seed treatment
French bean and Pea	Root rot, seed and collar white rot	Seed treatment, and soil treatment
Potato	Black scurf	Tuber treatment
Raddish	Seedling rot, damping off	Seed treatment
Tomato	Damping off	Seed and soil treatment

Ground nut	Wilt,stem rot, root rot, seed rot	seed treatment
Mustard	Damping off	Seed and soil treatment
Cotton	Root rot	Spray foliar
Aracanut	Fruit rot	Fruit treatment
coffee	Collar rot	Seed and soil treatment
Rubber	Brown rot	Soil treatment
Sugarbeet	Wilt,damping off, root rot	Sett and Soil treatment
Sugarcane	Red rot, seedling rot, wilt	Soil treatment
Cardamom	Capsule rot, damping off	Soil treatment
Coriander	Wilt	Seed treatment
Ginger	Rhizome rot, yellows	Rhizome treatment
pepper	Collar rot	Foliar spray
Tobacco	Damping off	Seed treatment, and nursery treatment
Maize	Charcoal rot, banded blight	Seed treatment, foliar spray
Paddy	Banded blight, kernel smut, brown spot and sheath blight	Seed treatment, soil treatment, foliar spray
wheat	Root rot,karnal bunt, loose smut, spot blotch	Seed and soil treatment, foliar spray
Flowers rose, gladiolus, jasmine	Yellows, corm rot, root rot, grey mould	Cutting, bulb treatment and foliar spray
Black gram	Dry root rot	Soil treatment
Chick pea	Damping off, wilt	Seed treatment, soil treatment
lentil	wilt	Seed treatment
Mung bean root rot	Root rot	Seed and soil treatment
Pigeon pea	Seed borne disease,wilt,blight	Seed treatment and spray
Pan(beetel vine)	Foot and root rot	Soil treatment
Tea	Collar rot, and damping off in seed jats in the nursery. Branch canker(Poria) and Thorny stem blight in Tea Stems Charcoal stump rot, Brown root rot ,Black root rot, in Tea Roots	Tea Bush foliar treatment, Root drench, stem drench Soil treatment etc.

### Method Of Application:

#### For seed Treatment

Use 5-10 gms of HARZINA GOLD /Kg seed , make a slurry in 15-25ml water and get the seeds coated with the paste just before sowing.

#### Seedling Treatment

A solution containing 5-10 gms of HARZINA GOLD per liter water has to be made. Dip the

roots of the seedlings for 15-20 mts just before transplanting the same.

**Rhizome/tuber/sett Treatment:**

Make a solution by using 1 kg HARZINA GOLD /100lits water, Dip the setts/tubers that will be required for planting an acre of area. Dry the tubers/setts for a few minutes before planting.

For Nursery beds make a solution by mixing 125 gms HARZINA GOLD in 25 lits water and drench 200 sq mts area of the nursery bed

**For Soil treatment:** For soil application mix 1 kg HARZINA GOLD in 20 Kgs Organic manure or well rotten F.Y.M leave it for 5-6 days ,cover it and keep it in a cool place, the Fungus Trichoderma will multiply in FYM or the Organic manure , which can be broadcast over 0.33 acre thoroughly incorporating the manure in the soil, after which an irrigation is a must.

**Foliar application :** Dissolve 1 Kg HARZINA GOLD in 200 lits water and use the same as a foliar spray, on the required crop. Drench liberally, ensure that there is enough humidity in the atmosphere for the fungus to establish.

**Compatibility:**

HARZINA GOLD can be used with well rotten farm yard manure/ Good quality de-oiled cakes like Trasco Plant Guard. HARZINA GOLD can be mixed as a tank spray with other Bio-Pesticides and Microbial inoculants which are not antagonist

**Speciality:** HARZINA GOLD is a Biopesticide , which has been found to be compatible with C.O.C (Blitox). ,Carboxin (Vitavax), and Metalaxyl (Ridomil). And hence can be safely used in combination with these Fungicides if required.

HARZINA GOLD is not at all compatible with Mancozeb 75% and Carbendazim 50% W.P.

**Shelf life of the product :**Under Normal storage conditions the shelf life is 6 months ,however if the product is stored at 20°C – 25°C without opening the packet, then the shelf life is around 1 year.

Packing: 100gms/250gms/500gms/1kg

**Manufactured by :Super Agro India Pvt Ltd**

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