

# Trichoderma Asperellum

1x 10<sup>10</sup> cfu/g T. Asperelum powder

## Introduction

Trichoderma asperellum provides combined plant protection for growing media treatment. It is a bio-nematicide, bio-fungicide and biofertilizer (promoting growth and branching of crop roots), act as competing directly with soil borne fungal diseases including Fusarium spp., Rhizoctonia spp., Sclerotinia spp., and Pythium spp., by biological space on the plant, through parasitism of competing microbes and by enhancing plant immune systems. The method of action is unique, it does not produce resistance, it is safe for crops, does not affect crop growth, does not pollute fruit surface, is non-toxic to bees, accelerates straw decomposition and decomposition, increases soil organic matter content, and improves the soil environment.



## Specification

Bacteria count : 1x 10<sup>10</sup> cfu/g , 2 x 10<sup>10</sup> cfu/g

Fineness: 80-200 mesh screen

Moisture: 8%

1 kg per bag or 25 kg / bag or as per customers request

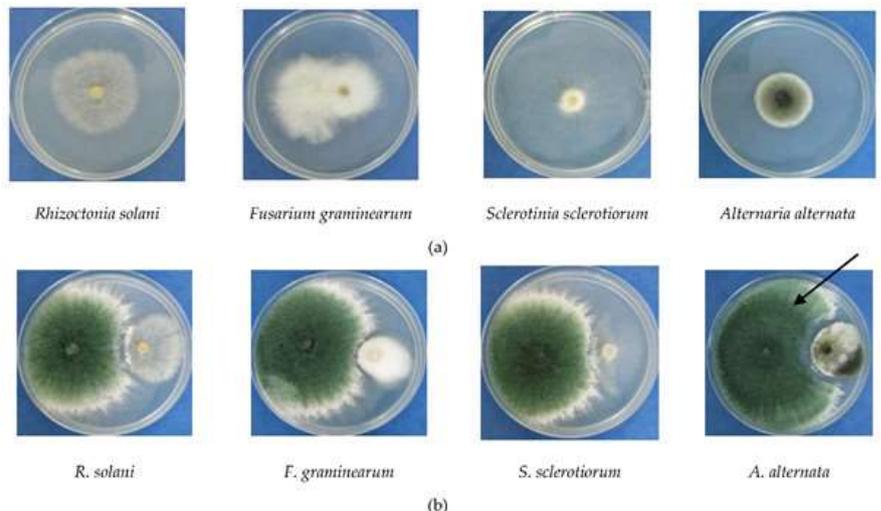
## DISEASE CONTROL

- Fusarium wilt (*Fusarium oxysporum*)
- White rot (*Sclerotinia cepivorum*)
- Damping off (*Pythium aphanidermatum*)
- Damping off (*Rhizoctonia solani*)
- Root rot (*Macrophomina Phaseolina*)
- Soft rot (*Sclerotinia sclerotiorum*)
- Blight (*Phytophthora capsici*)
- Grey mould (*Botrytis cinerea*)

## Antagonistic activity

*Trichoderma asperellum* Strain inhibits some pathogenic fungi of soil-borne plant diseases:

- (A) *R. Solani*,
- (B) *S. sclerotiorum*
- (C) *F. graminearum*
- (D) *A. alternata*



## Mode of Action

*Trichoderma asperellum* has been found effective in plant disease management due to its unique properties that include:

**Competition:** *T. asperellum* grows fast and establishes around the root zone and thus promotes niche exclusion of potential harmful microbes providing a barrier to combat disease-causing fungi. The fungus has a saprophytic activity. It produces gas, which inhibits stages of the development of phytopathogenic fungi.

**Growth promotion:** *T. asperellum* has the property of stimulating plant growth. The fungus establishes around the roots, aiding nutritional up-take and benefits plant growth and vigour.

**Antibiosis:** *T. asperellum* is known to produce antibiotic metabolites when grown in liquid culture. Inhibition of phytopathogenic fungi through antibiosis has been demonstrated.

**Mycoparasitism:** *T. asperellum* possesses  $\beta$  1-3 glucanases, chitinases and sometimes proteinases that enable them to parasitize the hyphae and sclerotia of the pathogen, invading the cells and causing lysis.

## Benefit

- ✓ Delivers broad spectrum disease control across range of root disease
- ✓ Suitable as a primary control method within an IPM programme

- ✓ Compatible with fertilizers, organic fertilizers, biostimulants
- ✓ Improve soil condition without resistance and residue problems
- ✓ Promote the growth of root system, enhance the effect of absorbing nutrients and moisture
- ✓ Increase the crops yield and quality

## Dosage & Method

- ✓ Apply 1 kg per acre, as early as possible to the crop for optimal effect.
- ✓ Reapply after 4-8 weeks to extend root protection for season-long control, depending on the disease pressure.
- ✓ Can be applied by broadcast, hill dressing, drill fertilization, root-irrigation, Turn the soil after watering, the product should be applied preventatively before disease onset in the plants.

## Biofungicide Preparation:

- ✓ Clean spray equipment prior to use ensuring that no traces of previous pesticides remain.
- ✓ Dissolve *Trichoderma asperellum* Biocontrol in a small amount of water and agitate ensuring product dispersion.
- ✓ Pre-mixing of the product is not required.
- ✓ Add the solution to the spray or irrigation tank with the total volume of water required, stirring continuously to ensure the product is thoroughly mixed.
- ✓ *Trichoderma asperellum* can be applied using a dosing pump such as a dosatron. Agitation of the stock solution is recommended to prevent precipitation.
- ✓ *Trichoderma asperellum* actively grows at temperatures between 15°C and 35°C, below 15°C growth is slowed and control levels reduced.
- ✓ *Trichoderma asperellum* is effective over a wide range of growing media types and pH levels.

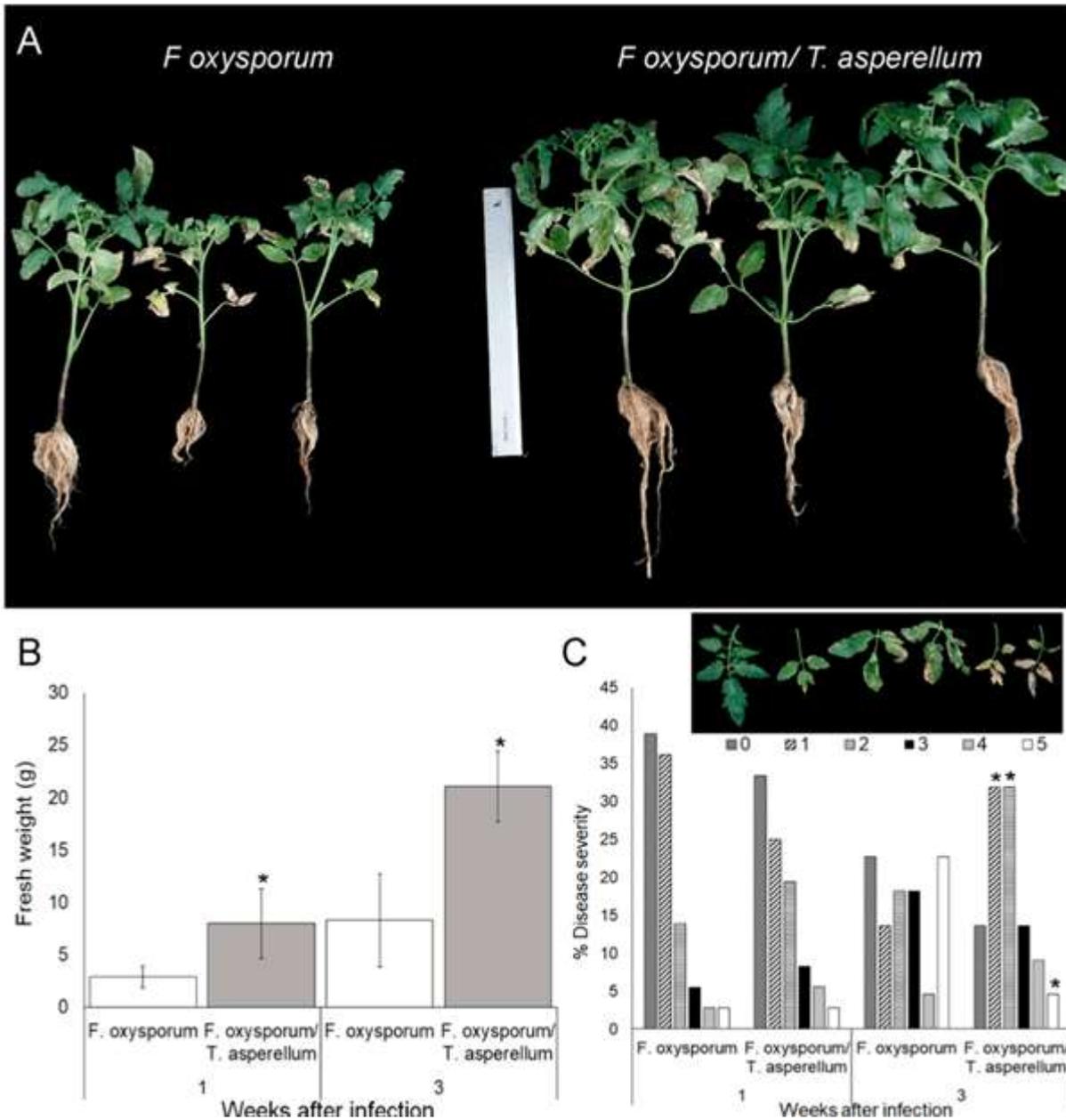
## Packing and shelf life

18 months shelf life, 1 kg per foil bag, 25 kg per bag

## Storage

Store in cool, dry location, keep out of direct sunshine and moisture. Once opened, should be use it within 30 days to prevent activation. Keep out of reach of children.

**Trichoderma Asperellum Reduces Fusarium Oxysporum Wilt Symptoms in Tomato Plants**



Trichoderma asperellum reduces Fusarium severity on tomato plants. (A) Fusarium oxysporum wilt and stunting symptoms on T. asperellum non- and preinoculated tomato plants after 3 weeks post infection. (B) Fresh weight was recorded at 1 and 3 weeks post-inoculation. (C) Disease severity (%) scores represent the number of leaves showing different levels of wilt symptoms shown in the upper panel in reference of total number of leaves of each plant. Symptoms were recorded at 1 and 3 weeks after infection.