



Tricho Acti-Plus

Microbial inoculant



Clockwise from top left: Panama disease in banana; white root disease in rubber; patch canker in durian; slow decline in black pepper; Fusarium wilt in tomato

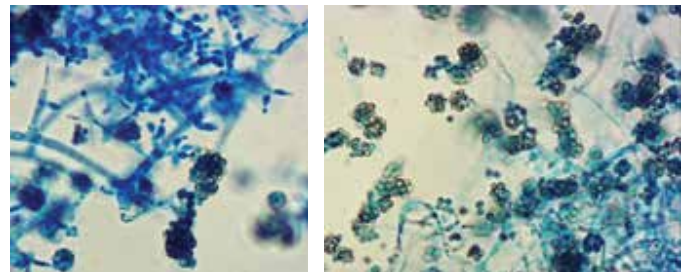
A MICROBIAL INOCULANT FOR CONTROLLING PLANT FUNGAL DISEASES

TRICHO ACTI-PLUS

Tricho Acti-Plus is a powder-based microbial inoculant containing *Trichoderma koningii* as the active ingredient for controlling fungal diseases in plants. *Trichoderma koningii* is a natural endophytic fungi isolated from oil palm roots in Malaysia that is proven to be effective against a wide variety of plant fungal pathogens. Its antagonistic effect against plant fungal pathogens is attributed to its ability to produce various anti-fungal metabolites (enzymes, peptaibols & volatile compounds) as well as its host-plant resistance induction capability. Tricho Acti-Plus is a proven, viable, sustainable and eco-friendly alternative to environmentally damaging chemical-based fungicides.

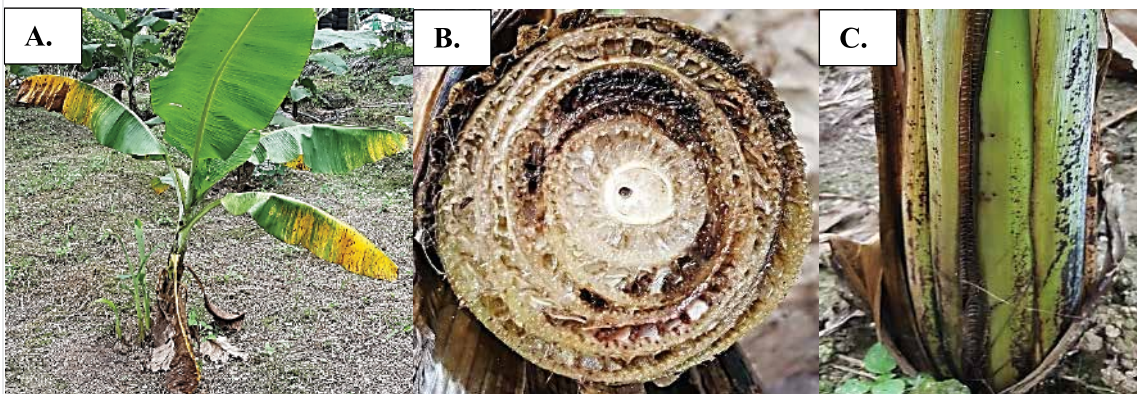
PRODUCT COMPOSITION

Details	Tricho Acti-Plus 6	Tricho Acti-Plus 7
Trichoderma CFU/g	1.00×10^6	1.00×10^7
Secondary Elements	>30%	
Micro-elements	>1%	
Silicon	20%	
pH	7 – 8	



Trichoderma under light microscope at 400x magnification

COMMON DISEASES CAUSED BY FUNGAL PATHOGENS

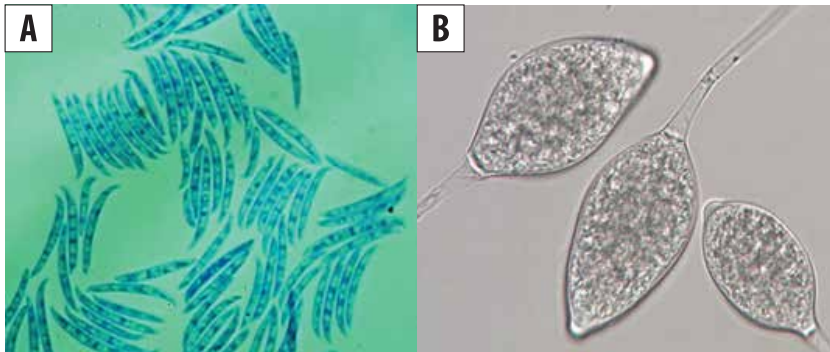


Symptoms of Panama Disease (Fusarium wilt) in banana:
 A. Yellowing leaf margin on older leaves;
 B. Discoloration of vascular tissue;
 C. Splitting of pseudostem



Progression of Phytophthora infection symptoms on black pepper leaves

COMMON DISEASES CAUSED BY FUNGAL PATHOGENS



A. Macroconidia of *Fusarium oxysporum*
B. Sporangia of *Phytophthora capsici*

INHIBITION PERCENTAGE OF FUNGAL PHYTOPATHOGENS BY *TRICHODERMA KONINGII*

Pathogen	Target Crop	Disease	Inhibition (%)
<i>Alternaria alternata</i>	Potato	Leaf blight	100.00
	Tomato	Early blight, cankers, leaf spot	
<i>Colletotrichum capsici</i>	Chili, pepper	Anthracnose	78.54
<i>Colletotrichum gloeosporioides</i>	Pepper, mango, papaya	Anthracnose	100.00
<i>Fusarium oxysporum</i>	Banana, tomato	Fusarium wilt	85.86
<i>Fusarium solani</i>	Pepper	Slow decline, root rot	79.67
<i>Ganoderma boninense</i>	Oil palm	Basal stem rot	88.38
<i>Giberella fujikuroi</i>	Paddy	Bakanae disease	100.00
<i>Phytophthora capsici</i>	Pepper, cucumber, eggplant, tomato	Blight, fruit rot	100.00
<i>Pythium ultimum</i>	Corn, potato	Damping off, root rot	100.00
<i>Rigidoporus lignosus</i>	Rubber	White root rot	100.00



Dual culture assay of *Trichoderma* (left) against *Phytophthora* (right)



Dual culture assay of *Trichoderma* (left) against *Fusarium* (right)

Recommended Application Method (Nursery):

- Mix 2% of Tricho Acti-Plus with planting medium (soil) prior to planting
- OR**
- Spray seedlings with 1% Tricho Acti Plus solution @ 20 L/ 200 polybags every 2 – 3 months

Recommended Application Method (Field Transplanting):

- Mix 1% of Tricho Acti-Plus with compost/ organic fertilizer and apply 0.5 kg – 1 kg of mixture into planting hole
- OR**
- Drench planting hole with 0.5 L – 1.0 L of 1% Trichoderma solution prior to transplanting

Recommended Application Method (Immature/Mature Crops):

Crops	Water Dilution	Dosage	Organic Matter Mixing	Dosage
Fruits		500ml/tree		500g/tree
Short term fruits	200g	200ml/plant	1–2% (w/w)	200g/plant
Vegetables	Tricho	100L/acre	Tricho	100kg/acre
Oil Palm	in	1L/tree	Acti-Plus in	500g/tree
Paddy	20L water	100L/acre	organic matter	100kg/acre
Rubber		500ml/tree		500g/tree

- Identify disease location and proceed to treat infected plants and surrounding plants to prevent spread of disease.
 - Spray base of plant (radius 45 – 50 cm) with Tricho Acti-Plus solution after monsoon showers. Spraying is to be repeated after every wet season.
- OR**
- Mix 1 – 2 % of Tricho Acti Plus with compost/ organic fertilizer. Apply mixture after monsoon showers. Applications are to be repeated after every wet season.

Storage

Store in cool and dry area away from feed or food stuffs. Avoid high temperatures. Optimum storage is at room temperature. Product is stable for up to 1 year.

Safety Precaution

Avoid contact with skin, eyes and clothing. Wear goggles, rubber gloves and face mask when handling and mixing. In case of contact, flush eyes or skin with plenty of water. Get medical attention if irritation persists.



Produced & Marketed by:

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