TECH OFFER

Nano Delivery Technology That Resolves Root Rot Diseases In Food Crops

KEY INFORMATION

TECHNOLOGY CATEGORY:
Sustainability - Food Security
Chemicals - Agrochemicals
Life Sciences - Agriculture & Aquaculture
Materials - Nano Materials
Chemicals - Additives

TECHNOLOGY READINESS LEVEL (TRL): TRL8
COUNTRY: SINGAPORE
ID NUMBER: TO174968

OVERVIEW

Root rot diseases in food crops are devastating diseases currently without solution. Examples of such diseases are the Basal Stem Rot in oil palms, Fusarium Wilt in bananas, and Phytophthora Root Rot in citrus.

While fungicides have *in vitro* efficacy, most do not possess phloem mobility and therefore cannot reach the roots to effect treatment. Thus, despite widespread usage of fungicides, root rot diseases are still inadequately treated or are not treated at all.

This Nano Delivery Technology imparts phloem mobility to fungicides, allowing them to reach the roots from the application site to treat and protect the crops.

For more information, contact techscout@ipi-singapore.org

The technology is designed as a ready-to-use adjuvant that works with commercialised fungicides. Growers can independently and safely nano encapsulate the fungicides with basic mixing equipment and a simple, one-step mixing process.

This technology is patent-pending and ready to market.

TECHNOLOGY FEATURES & SPECIFICATIONS

- Imparts phloem mobility to fungicides
- Enables fungicides to effectively reach roots from the application site
- Sustains a residual effect for up to 12 months per treatment
- Encapsulation material is naturally derived and biodegradable
- Works with commercialised fungicides such as Hexaconazole 75% WG, Dimethomorph 80% WG and Tricyclazole 75% WDG
- Simple, one-step mixing process can be handled independently by growers
- Proven effective in treating root rot disease in oil palms
- Helps growers cut losses by 75%

POTENTIAL APPLICATIONS

The technology can be easily scaled to treat other phloem restricted diseases such as Citrus Greening and address problem statements such as weeds and nutrient deficiencies in food crops.

MARKET TRENDS & OPPORTUNITIES

Climate change that results in extreme weather conditions such as heat waves and floods exacerbates the spread and intensity of root rot diseases in food crops. At this time, there is also no known or effective treatment for such devastating diseases. The combined global economic losses from root rot diseases in oil palms, bananas, and citrus alone are more than US$ 5 billion per year.

UNIQUE VALUE PROPOSITION

- Treats root rot diseases that are currently without solution
- Works with commercialised fungicides
- Reduces reapplication frequencies hence labour requirements
- Accelerates ESG compliance through reduced usage of fungicides
- Increases growers' climate change resilience
- Patent pending
- Ready to market