

## TECH OFFER

### Nano Delivery Technology That Increases Pest Management Efficiency In Food Crops



#### KEY INFORMATION

##### TECHNOLOGY CATEGORY:

Sustainability - Food Security

Chemicals - Agrochemicals

Chemicals - Additives

Materials - Nano Materials

Life Sciences - Agriculture & Aquaculture

##### TECHNOLOGY READINESS LEVEL (TRL): **TRL4**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO175010**

#### OVERVIEW

According to Food and Agriculture Organization (FAO), invasive insects cost the global economy around US\$ 70 billion each year. Rising temperatures, longer seasons, and changing weather patterns are creating more favourable conditions for insects to thrive in many areas, leading to increased infestations in crops. Traditional pest management methods in food crops, such as frequent spraying of insecticides and repeated inspection, are labour intensive and can have negative environmental impacts. This technology offers a promising solution to these challenges.

It simultaneously reduces the particle size of insecticides and modifies their surface properties, which increases foliar uptake by several folds. Once absorbed by leaves, the insecticides are no longer prone to wash off or environmental degradation, resulting in a substantially longer residual treatment effect and a reduction in usage volumes and reapplication frequencies of the

insecticides.

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

## TECHNOLOGY FEATURES & SPECIFICATIONS

- Modifies particle size and surface properties of insecticides to increase foliar uptake
- Encapsulation material is naturally derived and biodegradable
- Works with commercialised insecticides, such as Chlorantraniliprole 35% WDG, Imidacloprid 70% WDG and Diflubenzuron 25% WP
- Simple, one-step mixing process can be handled independently by growers
- Final application is compliant with label directives
- Sustains a residual effect for up to 4 months per treatment
- Reduces reapplication frequencies by up to 6 times
- Reduces insecticide consumption by up to 6 times

## POTENTIAL APPLICATIONS

The technology can be scaled to other problem statements such as stem boring pests, weeds and nutrient deficiency in food crops.

## UNIQUE VALUE PROPOSITION

- Reduces usage of insecticides
- Reduces reapplication frequencies and hence labor requirements
- Works with commercialised insecticides
- Accelerates ESG compliance through reduced usage of insecticides
- Increases growers' climate change resilience
- Helps growers to improve their yields and profits
- Patent pending