

TECHNICAL BULLETIN

μMicelle

For the treatment of Basal Stem Rot in Oil Palms



OVERVIEW

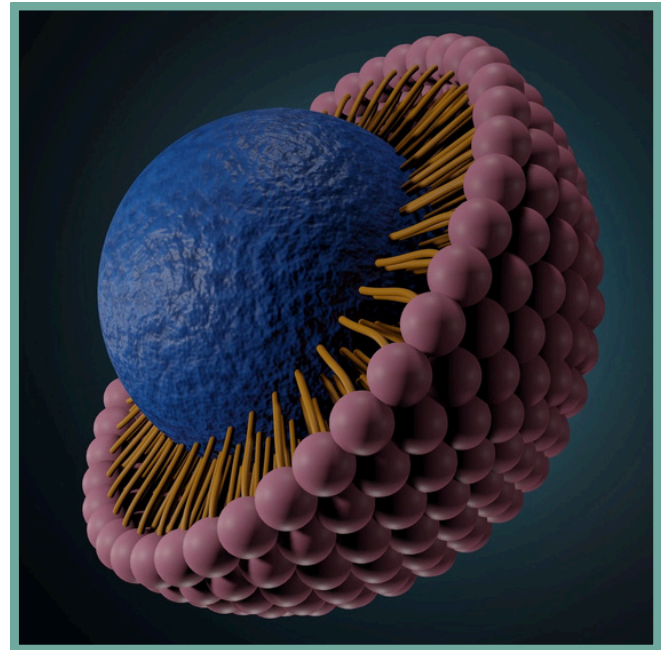
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Basal Stem Rot (BSR) is a critical disease affecting oil palm plantations, caused by the fungal pathogen *Ganoderma boninense*. This disease spreads mainly through root-to-root contact, where the fungus invades healthy palms from infected neighbouring plants. BSR leads to substantial yield losses and often results in the premature death of oil palms, making effective disease management crucial for the sustainability of palm production.

TECHNOLOGY

μMicelle is a patent filed nano-encapsulation technology designed to transform hydrophobic fungicides into nanoscale particles through a simple mixing process. This technology enhances the movement of fungicides through the phloem to the roots, providing precise and targeted delivery to the infection sites and fungal spore entry points. μMicelle improves the effectiveness of fungicide treatments, addressing the challenges of traditional chemical solutions that often struggle to reach the target areas.



A graphical representation of a fungicide in nano scale, encapsulated with μMicelle technology

BENEFITS

Precise targeting:

Nano-sized particles ensure that the fungicide is delivered directly to the roots and infected areas.

Enhanced fungicide efficacy:

μMicelle increases the absorption and effectiveness of fungicides, offering better control over BSR infections.

Simplified mixing:

The easy mixing process transforms fungicides into nanoscale particles without complex procedures.

Longer protection:

The technology provides sustained fungicide delivery, reducing the need for frequent applications.

SPECIFICATIONS

Mixing proportion	For a 10 L batch, mix 1.2 kg of Hexaconazole 75 % WG with 8.8 kg of μMicelle substrate. For a 20 L batch, mix 2.4 kg of Hexaconazole 75 % WG with 17.6 kg of μMicelle substrate.
Product form (Mixed product)	Liquid
Viscosity (Mixed product)	25 cps (25 °C)
Density (Mixed product)	1.0 g/cm ³ (25 °C)
pH (Mixed product)	7 (1 % solution)
Particle size (Mixed product)	177 nm



μMicelle substrate
8.8 kg & 17.6 kg pack size



Hexaconazole 75 % WG
(EPIC by Rallis)
100 g pack size

APPLICATION

Status of palms suitable for treatment	8 - 12 years old, producing fruits, but showing early signs of infection with fruiting bodies not exceeding 25 % of trunk circumference
Method	Trunk injection. A 25 mm hole is drilled at 45 ° angle, 50 cm from the ground. Mixed product to be injected into the hole. Hole is to be sealed with soil or putty after injection
Application apparatus	Typical trunk injection device or a plastic syringe
Dosage	50 ml per palm (final product)
Frequency	One application every 5 months, totalling 3 applications



Trunk injection of mixed product with a syringe



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