

Zonix™

BIOFUNGICIDE

Information about the unique Active Ingredient in Zonix Biofungicide™

Rhamnolipids Functions as a:

- Biosurfactant
- Biofungicide
- Chelator

Background

Rhamnolipids, produced by sterile bio-fermentation, are a unique compound that functions as a biosurfactant, biofungicide and chelator. Each contributes special functions to Sustainable agriculture. The bio-process, much like that used to produce antibiotics, is focused on purity to insure that the end product has excellent functionality. After an extensive review by the EPA, Rhamnolipids were found to be environmentally friendly and its use was approved for agriculture. **Zonix Biofungicide™** was then registered for use in plant health. To recognize the safety of Rhamnolipid Biosurfactant, the EPA exempted it from a tolerance in food.

Biosurfactant

Rhamnolipids are a natural biosurfactant that lower the surface tension of drip irrigation, drench or spray solutions. This reduction in surface tension is the same action that is exhibited by agricultural soaps, spreaders or stickers. It is the property that provides a homogeneous solution when two dissimilar liquids (like water and oil) are blended. If a spray droplet does not have reduced surface tension, uneven coating of the foliage will result. Leaf surfaces that are waxy or have hairs also prevent water from spreading evenly across the surface. This uneven coating reduces the effectiveness of the application. Also, if runoff occurs, product is wasted and costs are increased.

Rhamnolipids have been evaluated for foliar application and been found to provide excellent coverage and have not shown phytotoxicity. Biosurfactants also have excellent application to drip irrigation systems. Research at the University of Florida found that at a level of 40 ppm they aid in the penetration of water and fertilizer solutions to the plant root zone. Further, time studies indicate that a 40 ppm solution increased the water penetration rate by 30%.

Fungicide

The same biosurfactant properties exhibited by Rhamnolipids also make them a functional contact biofungicide. Rhamnolipid Biosurfactant is the Active Ingredient in **Zonix Biofungicide™**. It is effective for Downy Mildew, Late-Blight, Black Rot, and all Phytophthora and Pythium diseases. Its Mode of Action is by contact, causing the rupture of zoospore fungi cell membrane. A Contact Mode of Action does not build resistance and should be part of all IPM programs. As a biofungicide it has been approved for agricultural, turf and ornamental use. In agricultural applications it has a 4-hour re-entry and is exempt from EPA residue limits. When used as a biofungicide, **Zonix Biofungicide™** has excellent biosurfactant properties that help move water and nutrients to the plant.

Chelators

A healthy plant begins with good nutrition. When nutrition becomes unbalanced, the plant can become more susceptible to disease. Rhamnolipids are powerful chelators that are produced by soil bacteria in the root rhizosphere and aid in plant nutrition. Plants and bacteria use rhamnolipids to move minerals and micronutrients such as zinc, copper, magnesium, or iron to the root surface for absorption. These natural mineral complexes allow important nutrients to move quickly into the plant to support nutritional needs.

Summary

Rhamnolipid Biosurfactant has been recognized as a sustainable option for agriculture. When used as a biofungicide it provides the grower access to multiple avenues to improving plant health and nutrition. When **Zonix Biofungicide™** is used according to label directions, its exemption from tolerance, zero pre-harvest interval and mode of action provide excellent options for incorporation into a grower's IPM program.



PropTera™

Proptera, LLC • 106 A Industrial Dr. • Waxahachie, TX 75165 • (972) 937-9595 • www.proptera.com