

GREEN NANOEMULSION INTERVENTION FOR BIOPESTICIDE FORMULATION

TECHNOLOGY DESCRIPTION

This technology is concentrated form of green nanoemulsion system incorporated with bioactive azadirachtin to be used as biopesticide against armyworm larvae.

TECHNOLOGY FEATURES

This technology uses natural neem oil extract azadirachtin renders good biodegradability and non-toxicity at recommended applied dose. The nanoemulsion system is used together with palm kernel oil esters (PKOEs) polyoxyethylene sorbitan monooleate and water from natural source to form biopesticide formulation. It is highly stable and exhibits small particle size less than 200nm and uniformly dispersed for optimal and enhanced insecticidal effect. This formulation is effective against armyworm larvae (*Spodoptera litura*) in a low concentration (7.55µg/ml) as compared to other commercial formulation (70.13µg/ml).

ADVANTAGES

- Green sources of adjuvant and biopesticide
- Prolonged shelf-life of the concentrated product
 - Easy application by diluting in water
 - Lower dose formulation – effective insect control
 - Maintaining the commercial value of vegetable

INDUSTRY OVERVIEW

Prospects: Organic farming, vegetables farms and field crops plantation

These days, eco-friendly biopesticides formulation has acquired a rising demand as product consumption and awareness towards organic benefits increased. The global sales for biopesticide is estimated to reach USD3.6 billion at the end of 2014 and USD6.9 billion by 2019, with a five-year CAGR of 13.9%. While North America dominated the global biopesticides market, accounting for nearly 40% of market demand, there was approximately 20% demand

for biopesticides in Asia Pacific and it is expected to emerge as the fastest growing market. Although there is no specific data reported in Malaysia, it is known that Malaysia has a strong foundation for agricultural biotechnology to provide food security for the country. As the leader in the production of several industrial crops such as oil palm, rubber, cocoa, pepper and tropical timber, the need for agrochemical especially bio-pesticide is expected to increase. Indeed, demand for biopesticide is expected to grow at the fastest CAGR of 16.1% from 2012 to 2017.



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