Water-Based Nanoemulsion Pesticide Formulation of Saponin to Control Apple Snail

TECHNOLOGY DESCRIPTION

This technology is a formulation to control the apple snail which attacks and destroys paddy plants.

TECHNOLOGY FEATURES

The formulation contains nanoemulsion of 10% of crude by weight and is made from vegetable based oil. The surfactant is from castor oil ethoxylate and it uses less than 20% surfactant. The size of the nanoemulsion is small (50 to 500nm), thus, the formulations can be spread on target effectively. The active ingredient in this water-based nanoemulsion is plant based saponin. It can be blended with other surfactants to produce a new formulation. It has a longer retention time compared to niclosamide and currently available technologies in the market.

ADVANTAGES

- Effective, safe and economically viable formulation
- The use of environmentally friendly ingredients
- Reduces or prevents the usage of chemical controls

INDUSTRY OVERVIEW

Prospect: Agriculture Industry

The golden apple snail (Pomacea canaliculata) was introduced intentionally into Asia in 1980, with the expectation that it could be cultivated as a high-protein food source for local consumption and as an export commodity for high income countries. It has since invaded Asian rice systems, where it is dispersed through extensive irrigation networks and feeds voraciously on young rice seedlings. Fast growth (60 days) and reproduction (1000 – 2000 eggs per month) of apple snail leads to high population levels which can destroy the entire crop. The rice infested by snails in Malaysia are expected to be around 21,700 ha in 2009 with estimated losses approximately RM 82.5 million. This invention is a water-based nanoemulsion formulation of saponin that focuses to control apple snails. It can be blended with other surfactants to produce a new formulation, and is considered to be effective, safe and economically viable molluscicidal formulation. The global volume market for pesticides is expected to increase from 2.3 million tons in 2013 to 3.2 million tons in 2019. Asia is forecasted to be the fastest growing continent in agriculture, with a 2014-2020 volume Compound Annual Growth Rate (CAGR) of 7.9%. At the moment, it is expected that the potential users of the product are the 172,230 rice farmers in Malaysia who rely on rice farming as their main source of income. Other intended users are also rice farmers residing in the Southeast Asia countries such as Indonesia, Thailand, Vietnam, Myanmar, Philippines, Cambodia, China, India, Bangladesh, Brazil, Japan, Korea, and Australia.

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