

Synergism of entomopathogenic fungus, *Metarhizium anisopliae* incorporated with fipronil against oil palm pest subterranean termite, *Coptotermes curvignathus*

ABSTRACT

The compatibility and synergy in efficacy of the termiticide fipronil with a biocontrol agent *Metarhizium anisopliae*, alone or in combination, against the subterranean termite, *Coptotermes curvignathus* were investigated. Sublethal doses of fipronil were found relatively less detrimental to fungal growth of *M. anisopliae* local isolates in a compatibility test. The fungus-insecticide bait formulation showed the greatest synergistic effect that increased termite mortality as well as reduced the lethal time at a sublethal dose of 0.05 mg a.i./l fipronil with conidia concentrations of 107 conidia/g bait ($\chi^2 = 48.80$) at LT50 value of 6.46 days, followed by 108 conidia/g bait ($\chi^2 = 5.09$) at LT50 value of 4.89 days compared to the use of these control agents alone. The insecticidal stress caused by sublethal fipronil in the formulated bait may weaken the termites and reduce their defence mechanism, which facilitates fungus infection on termites. The observed synergism treatments show the potential for integrated fungus-insecticide control method and need to be further investigated on termite infested oil palm trees.

Keyword: Compatibility; Joint-action rhinotermitidae; Termite baiting; Toxicity