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The Evaluation of Solid Substrate Formulation of *Metarhizium anisopliae* var. *major* (M-SS), against *Oryctes rhinoceros* L. in Young Oil Palm Plantations

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The pathogenicity of *Metarhizium anisopliae* var. *major* - solid substrate (M-SS) was evaluated against *Oryctes rhinoceros* in a greenhouse and large-scale field study of new oil palm replanting areas. The M-SS was prepared by fermenting 500 g maize bran with 7 ml *M. anisopliae* mycelia liquid for 30 days to achieve M-SS viability of 91.45 per cent. The greenhouse study indicated that application of M-SS at 3.74 g per sq.m killed 92.17 per cent of the first, second and third instars larvae at six weeks after application (WAA) and is equally effective as commercially prepared *Metarhizium* formulated in powder form. Then, performance of M-SS in the field was tested in two replanting plots (28 ha and 33 ha) through a blanket application and artificial breeding sites (ABS) technique (50 ha), integrated with pheromone trap, which was manually applied on decomposing chipped oil palm biomass aged four to five months after felling and chipping (MAF). The result of these studies showed that 32.9 - 42.6 per cent of *O. rhinoceros* were infected especially on third and second instar larval at twenty-fourth and fourteenth month after application (MAA), respectively. These results indicate that *M. anisopliae* applied in the form of solid substrate was effective in controlling *O. rhinoceros* population which would subsequently prevent the pest outbreaks in the oil palm - to - oil palm replanting areas. The M-SS form is easily prepared and very practical for use by the planters to control the target pest.

Keywords: *Metarhizium anisopliae*, solid substrate, oil palm replanting.

