

Capability of powder formulation of bioorganic containing *Pseudomonas GanoEB3* for promoting the growth of oil palm seedlings

ABSTRACT

Oil palm is one of the important crops in Malaysia. As one of the biggest producers of oil palm products, Malaysia has to fulfill the global needs for fats and oils sustainability. The objective of this study was to develop bioorganic containing *Pseudomonas GanoEB3* for promoting oil palm growth. Endophytic bacteria *Pseudomonas GanoEB3* was isolated from healthy oil palm roots and cultured on nutrient agar media. A suspension containing 10⁸ CFU/mL of the bacteria cells being mixed with vermiculite powder. The vermiculite powder containing bacteria has been formulated with bioorganic empty fruit bunch (EFB) and bioorganic real strong (RS). 30 g Bioorganic EFB mixed 30 g vermiculite containing bacteria and 10 g Bioorganic RS mixed 50 g vermiculite containing bacteria showed the best viability test after twelve months product storage and were chosen to be applied in the field study. Four-month-old Dura x Pisifera were obtained from Felcra Sungai Tekam, Pahang, Malaysia. The experiment was carried out with three treatments; T1; seedling untreated and uninfected, T2; seedling treated with Bioorganic Empty Fruit Bunch (EFB) *Pseudomonas GanoEB3* and T3; seedling treated with Bioorganic Real Strong (RS) *Pseudomonas GanoEB3*. 30 g of both fertilizers were applied to the seedlings according to their treatment every two month interval. Plant growth results showed T3 gave the highest result in plant height, stem diameter, chlorophyll content, leaf area index and biomass, followed by T2 and T1. This study revealed that bioorganic containing *Pseudomonas GanoEB3* is suitable as an effective biological control agent for promoting the growth of oil palm seedlings.

Keyword: Biocontrol agent; Empty fruit bunch; Endophytic bacteria; Fertilizer; Physiological study; Real strong