

ABSTRACT

THE GROWTH OF OIL PALM SEEDLINGS (*Elaeis guineensis* Jacq.) WITH THE APPLICATION OF DIFFERENT ARBUSCULAR MYCORRHYZA FUNGI AND VARIOUS PHOSPHATE AND ORGANIC MATTER DOSAGES

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The effectiveness of Arbuscular Mycorrhiza Fungi (AMF) depend on the type of AMF, plant and application of phosphate and organic matter. The aim of this research are suitable to determine (1) the best type of AMF in enhancing growth of oil palm seedling, (2) the suitable dosage of phosphate and organic matter for the growth of oil palm seedling, (3) whether the oil palm seedling responses to the application of AMF type is determined by dosage of phosphate and organic material used, (4) the best dosage of phosphate and organic matter for each type of AMF to produce the best oil palm seedling growth.

The experiment 1 was factorial experiment (4x3) with five replications. The first factor was types of AMF (M), consisted of 4 levels: without mycorrhizal inoculation (m_0), *Gigaspora* sp. Isolate MV16 (m_1), *Glomus* sp. Isolate MV7 (m_2), *Gigaspora* sp. Isolate MV16 + *Glomus* sp. Isolate MV7 (m_3). The second factor was application of phosphate fertilizer, consisted of 3 levels: 1/3 recommended dosage SP36/polibag (p_1), 2/3 recommended dosage SP36/polibag (p_2), 3/3 recommended dosage SP36/polibag (p_3).

The experiment 2 was factorial experiment (4x3) with five replications. The first factor was type of mycorrhizal, consisted of 4 levels (same with the experiment 1). The second of factor was application organic matter based on volume in

media planting consisted of : 1 part organic matter : 3 part subsoil (b_1), 1 part organic matter : 2 part subsoil (b_2), 1 part organic matter : 1 part subsoil (b_3).

Treatments were arranged in a Completely Randomized Block Design.

Homogeneity of variance was tested using Bartlett test and the additivity of data was tested using Tukey test. All data were subjected to analysis of variance, and further mean separation was done using Least Significant Difference (LSD) at 5% level.

Results of experiment showed that (1) application of all AMF type had the same growth of oil palm seedling, however the seedling growth are better than control, (2) phosphate 3/3 treatment produced the highest seedling growth, whereas organic matter treatment was not affected the seedling growth, (3) responses of seedling to the application of AMF type was not determined by dosage of phosphate used, however responses of seedling to the application of AMF was determined by dosage of organic matter. The growth of non mycorrhizal seedling was influenced by dosage of organic matter, while the mycorrhizal seedlings were not affected by dosage of organic matter, and (4) there was no the best treatment combination of AMF and the dosage of phosphate in enhancing growth of oil palm seedling; the best organic matter for non mycorrhizal seedlings were 1:1 and 1:2 and for mycorrhizal seedling, dosage of organic matter didnot affected seedling growth.

Key words: Oil palm seedlings, mycorrhizal fungi arbuskular types, phosphate, organic matter.