UNIVERSITI TEKNOLOGI MARA

PERFORMANCE OF *Jatropha curcas* L. AS AFFECTED BY PROPAGATION, PLANTING DISTANCE AND ETHEPHON TREATMENT

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MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Jatropha plantation has been long introduced in Malaysia as a new alternative for petroleum substitute. The precious oil extracted from the seed makes it an interesting plant to discover. However, the problem of desynchronizing flowering and fruiting of this plant has become an issue that caused high labour works especially in urban area. Thus, it is important to understand the growth of Jatropha and identify the best method of cultivating Jatropha. The aim of this study is to investigate the performance of Jatropha curcas on field under different propagation methods (seed and cutting), planting distances (1x1x1m, 2x2x2m, and 3x3x3m) and different ethephon concentrations (control, 150mg L^{-1}, 300mg L^{-1} and 600mg L^{-1}). The results showed that the percentage of seed germination was 97.22% and percentage of cutting sprout was 95.37%. The percentage of survival for cutting and seed were calculated at 97.22% ± 0.69 and 50.69% ± 19.88, respectively. Different propagation methods significantly affected the growth of Jatropha in terms of plant height, stem diameter, number of branches, number of flowers and number of fruits. The number of fruits in cutting propagated at planting distance 2x2x2m was recorded at 39.29 compared to planting distance 1x1x1m and 3x3x3m with 21.79 and 25.04, respectively. However, different planting distance did not give any effect on the growth of Jatropha. The application of ethephon at 300 mg L^{-1} increased the production of fruits significantly with 31.27 ± 1.67. However, other morphological performances were not affected by ethephon application. This study showed that Jatropha propagated using cutting and planted at planting distance 2x2x2m potentially improved the growth performance and increased yield production of Jatropha. The application of ethephon at 300 mg L^{-1} will possibly help to boost the yield production of Jatropha.

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