

UNIVERSITI TEKNOLOGI MARA

**FIELD TESTING & EVALUATION OF A
NEWLY-DEVELOPED MACHINE FOR
HOLING SOIL IN LARGE POLYBAG IN
OIL PALM NURSERY**

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Final year proposal report submitted in partial fulfillment of the
requirement for the degree of
**Bachelor of Science (Hons.) Plantation Technology and
Management**

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CANDIDATE'S DECLARATION

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ABSTRACT

A new machine system has been developed and evaluated for holing soil in large polybag operation at oil palm nursery to overcome the labor shortage problem especially during transplanting oil palm seedling process from pre-nursery to the main nursery. Currently, as reported by Pebrian et;al (2014), holing soil in large polybag using manual system by cylindrical borer during transplanting oil palm seedling consumed higher demand human energy and havebeen identified as the factor of tiredness among the worker in oil palm nursery. Faculty Plantation and Agrotechnology (FPA) Team Research have been developed new machine holing soil to overcome these problem. The machine system consist of main chasis, operator compartment and a pair of drilling unit (150mm) with powered by 11HP (8.25 KW) diesel engine. The performance of the machine have been evaluated and compared with published journal by manual system in term of production capacity and human energy expenditure while the comparison of cost production made based on the interviews from oil palm nursery producer. The mechanized system showed the average of production capacity of 256 bag per man per hours or increasing 49.21% compared to manual system. Reduction of human energy expenditure and cost production with 4.35 kcal per min per man or 38.70% and RM 0.02 per bag was obtained by mechanized system against manual system operated using cylindrical core borer. In short, the new mechanized system has great potential to overcome the limitation of labor shortage and increasing the productivity in oil palm nursery plantation.

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