

**UNIVERSITI TEKNOLOGI MARA**

**EVALUATION OF FATTY ACID  
COMPOSITIONS, IODINE VALUE,  
CAROTENE CONTENT, HEIGHT  
AND HEIGHT INCREMENT OF OIL  
PALM INTERSPECIFIC HYBRID  
(*Elaeis guineensis* x *Elaeis oleifera*)**

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**MSc**

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## AUTHORS'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

Malaysia's oil palm industries are bloomed with the implementation of new technologies and the availability of promising planting material. Producing of the promising planting materials normally has pushed the oil palm breeders to fit all great characters into new lines of genetic. The possibility of getting superior planting materials is difficult and time consumed but it's not a barrier to thrust tremendous breeding programme. One important characters of the oil palm that counted into consideration is higher unsaturated fatty acids. Higher saturated fatty acid in edible oil has been proven to have positive correlation with cardiovascular disease or CVD. The planting material that we have today has marginally low level of unsaturated fatty acid but using material of other species like *Elaeis oleifera* has returned with low yield. The possibilities of crossing two species (*Elaeis guineensis* and *Elaeis oleifera*) are achievable as it sexually compatible that by far has confirmed to inherit character such as resistant to lethal disease, lower stature and good oil quality including higher unsaturated fatty acids. Furthermore, *Elaeis guineensis* well known for its higher yield than *Elaeis oleifera*. Total of 160 palms of 16 progenies and planted with two replications at MPOB Research Station, Bagan Datuk Perak was evaluated. This study has been carried out to evaluate the fatty acid compositions, iodine value, carotene content, height and height increment of oil palm interspecific hybrid. The oil palm interspecific hybrid used formed by crossed of *Elaeis oleifera* and *tenera* (*Elaeis guineensis*) and reciprocal study also carried out. This study has revealed that the total unsaturated fatty acids are higher with range of 60% of total composed fatty acids than the current planting materials with around of 50%. Iodine value shows a considerable amount of the oil palm interspecific hybrid with mean value range at 65 and carotene content among some individuals show amount that nearly of *Elaeis oleifera* with value of 3424 ppm. Height and height increment showed a considerable value of the oil palm interspecific hybrid. This study revealed that *Elaeis oleifera* suited to be maternal based on progenies performances. This study also had delivered that environment effect give much affection into the phenotypic expression such in fatty acid compositions and carotene content. While moderate value of heritability such as height and height increment suggest that genetic variation affect to the phenotypic expression. This study also suggested that progeny 3 (MS3407), progeny 7 (MS3444) and progeny 11 (MS3452) have been selected based on best oil traits, height and height increment, respectively. Nevertheless, further improvement of the selected progenies can be conducted. Selfing and backcross to the elite materials or parent can be made in order to produce best line in near future.

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