

DETERMINATION OF RIPENESS OF PALM FRUITS (FFB)

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This dissertation submitted in partial fulfillment of the requirements for the Degree
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DECLARATION

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ABSTRACT

Demand for palm oil is increasing rapidly. Ripeness of the Fresh Fruit Bunches (FFB) plays a vital role in determining the quality of the CPO and oil content in the fruits. Therefore FFBs should be placed under suitable category for processing of oil in the mills. Categorizing the palm bunches according to their ripeness is the most critical step of the mill grading process. A common method of determining the ripeness of palm fruit is by visual inspection of the palm bunches by experienced individuals for which the colour of the fruit and amount of loose fruits become the main attribute. Changes of colour indicate the stages of ripeness. Categorizing the palm fruit bunches according to their ripeness by manual inspection is tedious, inconsistent, time consuming and inaccurate. This research focuses on a solution to the palm oil industry for this problem, based on image processing which will increase the quality of the oil and speed up the grading process, by the result of automating the mill grading process. The solution focuses on categorizing the palm bunches into three groups namely; under-ripped, ripped and over-ripped.

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LIST OF ABBREVIATIONS

ANN	–	Artificial Neural Network
DN	–	Digital Numbers
FFB	–	Fresh Fruit Bunches
GUI	–	Graphical User Interface
NIR	–	Near Infra-Red
PCA	–	Principal Component Analysis
CPO	–	Crude Palm Oil
Ha	–	Hectare
MATLAB	–	Matrix Laboratory
MPOB	–	Malaysian Palm Oil Board