

Thesis Title **Studies on Biology of Mayau Tree (Aleurites montana Wilson) and Plausibility Study of Their Oils as an Insulating Oil.**

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Degree **Master of Science (Environmental Biology)**

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ABSTRACT

Biological studies of mayau trees aged between 1 to 6 years old indicated that they began to bear fruits at the age of 3 and gave maximal yields at the age of 6 with the yield/tree of about 18.4 kg. or approximately 2100 kg./acre (830 kg./rai). The oil yield from the kernel was 33 % (by weight) by hydraulic-press extraction and was 55.6 % by n-hexane extraction method. The last figure is equivalent to 1,200 kg./acre (465 kg./rai). It was found that after undergoing neutralization treatment with 20 °Be' NaOH (equivalent to 14.36 % by weight), the oil attained a relatively high dielectric strength of about

227 kV/cm. (Dielectric strengths of insulating mineral oils of 120 kV/cm. are regarded as the lowest acceptable value).

Mayau oils were found to thicken slowly at elevated temperatures and to become gelatin-like mass eventually. This behaviour alone would prevent their being used as an insulating oil unless means of inhibiting this polymerization, without introducing adverse effects on their dielectric strength, can be found.

As for fatty acid compositions, the following values were obtained : 0.657 % lauric acid, 0.257 % myristic acid, 4.96 % palmitic acid, 3.72 % stearic acid, 12.67 % oleic acid, 17.25 % linoleic acid, 0.45 % linolenic acid and 60.06 % eleostearic acids.