ANATOMICAL PROPERTIES OF KELEMPAYAN (Neolamarckia cadamba)

BY

NURSYUHADA BINTI MOHD NIZAM

Thesis Submitted in Partial Fulfillment of Requirements for the Degree of Bachelor of Science in Furniture in the Faculty of Applied Sciences, Universiti Teknologi MARA

JULY 2015

CANDIDATES'S DECLARATION

I declare that the work in this Final Year Project was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. The final year project report has not been submitted to any other academic institution or non academic institution for any other degree or qualification.

In the event that Final Year Project is found to violet the conditions mention above, I voluntarily waive the right of conferment of my bachelor degree and agree to be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

Name of Candidate	:	NURSYUHADA BINTI MOHD NIZAM
Candidate's ID No.	:	2012475442
Programme	:	Bachelor of Science (Hons) Furniture Technology
Faculty	:	Faculty of Applied Sciences
Title	:	Anatomical Properties of Kelempayan (<i>Neolarmarckia cadamba</i>)
		× .

Signature of Candidate

July 2015

;

:

ABSTRACT

ANATOMICAL PROPERTIES OF KELEMPAYAN (Neolamarckia cadamba)

Kelempayan species or its scientific name (Neolamarckia cadamba). This species have the potential to be commercialized as a raw material in the furniture industry and paper production. However, the information about these species is still inadequate and not being fully utilized. In this study, anatomical properties and morphological characteristics are carried out. Thus, anatomical properties is only focused on the effect of different height portion of the tree (bottom, middle, and top) while two aspects are concerned in morphological characteristics on the effect of different height portion of the tree (bottom, middle, and top) and the effect of distance(from near bark to near pith). For anatomical properties, the results have shown that different height portion gave highly significant for vessel frequency and vessel diameter. Morphological characteristics consist of fiber length, fiber diameter, and lumen diameter. For the result of the effect of different height portion, there is no significant difference for fiber length but highly significant for fiber diameter and lumen diameter. Diameter of fiber and diameter of lumen decrease when the height portions of tree increase because there is formation of new wood cell at the top portion. On the other hand, the result of effect of distance, fiber length and fiber diameter have highly significant but no significant for lumen diameter. This is because near bark has a wood cell that have through the process of formation of secondary xylem.

TABLE OF CONTENTS

APPROVAL SHEET		FAGE
CANDIDATE'S DECLARATION		
DEDICATIONS		
TABLE OF CONTENTS		
LIST OF TABLES		
LIST OF PLATES		
ABSTRACT		
ABSTRAK		
CHAPTER	3	AIII
	× *	
1	INTRODUCTION	1
	1.1 Overview	1
•	1.2 Problem Statements	2
	1.3 Objectives	3
	* * * *	
2	LITERATURE REVIEW	4
	2.1 Neolamarckia cadamba spp	4
	2.1.1 Description	4
	2.1.2 Properties and Uses of Kelempayan Wood	6
	2.2 Anatomical Properties	7
	2.2.1 Vessel/pore	7
	2.2.2 Tyloses	7
	2.2.3 Wood Parenchyma	8
	2.2.4 Ray	8
	2.3 Morphological Properties	9
	2.3.1 Fiber Length	9
	2.3.2 Cell Wall Thickness	9
	2.3.3 Lumen Diameter	10
	2.4 Importance of Fiber Morphology	10
	2.4.1 Runkel Ratio	10

vi

	2.4.2 Felting Power	12
3	MATERIALS AND METHODS	13
	3.1 Materials Preparation	13
	3.2 Anatomical Properties	15
	3.2.1 Method	15
	3.3 Morphological Properties	17
	3.3.1 Fiber Maceration	17
	3.3.2 Slide Preparation	17
	3.4 Design of Experimental	20
	3.5 Method of Statistical Analysis	20
4	RESULTS AND DISCUSSIONS	21
	4.1 Introduction	21
	4.2 Anatomical Properties of Kelempayan	25
	4.2.1 Statistical Analysis	26
	4.2.2 Effect of Portion on Anatomical Properties	26
	4.3 Fiber Morphology of Kelempayan	27
	4.3.1 Statistical Analysis	29
	4.3.2 Effect of Portion on Fiber Morphology	30
	4.3.3 Effect of Distance on Fiber Morphology	31
	4.3.4 Runkel Ratio and Felting Power	32
5	CONCLUSIONS AND RECOMMENDATIONS	33
	5.1 Conclusions	33
	5.2 Recommendations	34
RE	FERENCES	35
API	PENDICES	38
CURRICULUM VITAE		
PU	BLICATION OF THE PROJECT REPORT UNDERTAKING	44
PE	RMISSION FOR REFERENCES AND PHOTOCOPYING	45
