UTILIZATION OF OIL PALM BIOMASS IN WOOD-BASED INDUSTRY

By

MOHD YUNUS BIN MAT YUSOF

Final Project Paper Submitted in Partial Fulfillment for the Diploma in Wood Industries, Faculty of Applied Science, Universiti Teknologi Mara.

APRIL 2007

i

ACKNOWLEDGEMENT

First of all, I would like to thankful to our God, Allah S.W.T because give me the chance to complete this final project or thesis for this semester without any serious problems. Besides that, thanks a lot to my advisor, CIK NURROHANA BINTI AHMAD because of full supported during my study on "Utilization of Oil Palm Biomass in Wood-based Industry.

Then, thanks to PROF. MADYA JAMALUDDIN BIN KASIM for useful comments and suggestions and then thanks for technical services the library of Al-Bukhari (UiTM Pahang). In addition, thanks to all my friends batch July 2004 until April 2007 because of their cooperation during my presentation time and all of DIP staff. Lastly, thanks a lot to all my family members, my lovely mum and dad, my brothers and my sisters

because of their full supported during my study in University Technology of MARA, Pahang Branch especially in giving me an advice and finance resources also. I also want to give my true appreciation to my "special" friend,

which always remember me at all the time.

iv

TABLE OF CONTENT

TITLE

PAGES

PROJECT TITLE	i
APPROVAL SHEET	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF PLATES	ix
LIST OF ABBREVIATIONS	х
ABSTRACT	xi
ABSTRAK	xii
CHAPTER	

I	INTRODUCTION	1
	1.1Justification	3
	1.2 Objective	4

2	OIL PALM TREE	5
	2.1 Historical Development	5
	2.2 Climate and Soil Requirement	7
	2.3 Morphology and Crop Variety	9
	2.4 Yield Performance	
	2.5 Chemical composition	14
	2.5.1 Palm Oil	14
	2.5.2 Palm Kernel Oil	17
	2.5.3 Palm Kernel Cake	17

3	OIL PALM INDUSTRY IN MALAYSIA	18
	3.1 Preview	18
	3.2 The Processing of Palm Oil	19
	3.3 Overview of Malaysian Palm Oil Industry	21

4	OIL PALM BIOMASS	29
	4.1 Estimation of Oil Palm Biomass Availability in Malaysia	29
	4.1 Estimation of Oil Palm Biomass in Wood-based Industry	34
	4.2.1 Pulp and Paper	34
	4.2.2 CTMP/TMP	36
	4.2.3 Medium Density Fiberboard (MDF)	36
	4.2.4 Blockboard	37
	4.2.5 Furniture	38
	4.2.6 Plywood	38
	4.2.7 Thermoplastic and Thermoset Composite	39
	4.2.8 Moulded Paper Product	40
	4.2.9 Particleboard	41
	4.3 Technical Problem of using Oil Palm Biomass	44
	4.3.1 Storage	44
	4.3.2 Parenchyma Cell	44
	4.3.3 High Silica Content	45
	4.3.4 High Moisture and Low Bulk Density	45
	4.4 Advantages and Disadvantages of Using Oil Palm Biomass	46
5	CONCLUSION AND RECOMMENDATION	48
REFE	CRENCES	49
VITA		51

UTILIZATION OF OIL PALM BIOMASS IN WOOD-BASED INDUSTRY

By

MOHD YUNUS BIN MAT YUSOF

APRIL 2007

ABSTRACT

The properties and used of oil palm biomass have been discussed. The example of oil palm biomass is empty fruit bunch (EFB), oil palm frond (OPF) and oil palm trunk (OPT). The oil palm gives the highest yields per hectare of all oil crops at present. The family of oil palm, the Arecaceae has always formed a distinct group of plant among the monocotyledons. The oil palm of commerce (*Elaeis guineensis*) is believed to be indigenous to West Africa, but recently Malaysia has the most mature of oil palm industry in the world. The oil palm biomass is suitable in the production of most wood-based industry product. Hence, the oil palm biomass can be greatly utilized as a raw material for wood-based industry.